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TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1925

No. 107

THE ALEXANDER MILBURN COMPANY, PETITIONER,

vs.

DAVIS-BOURNONVILLE COMPANY

ON A WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

PETITION FOR CERTIORARI FILED JUNE 23, 1924

CERTIORARI GRANTED OCTOBER 20, 1924

(30,437)

(30,437)

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[fol. 1] **IN UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK**

In Equity. No. —

DAVIS-BOURNONVILLE COMPANY, Plaintiff,

vs.

THE ALEXANDER MILBURN COMPANY, Defendant

BILL OF COMPLAINT

To the Honorable the Judges of the United States District Court in and for the Southern District of New York:

Davis-Bournonville Company, a corporation duly organized and existing under the laws of the State of New York and having offices at 149 Broadway, New York City and at Jersey City, New Jersey, brings this, its bill of complaint, against The Alexander Milburn Company, a corporation organized under the laws of the State of Maryland and having a regular and established place of business at 51 East 42 Street, New York City, New York, and says:

1. That this is a suit in equity arising under the Patent Laws of the United States.

[fol. 2] 2. That the plaintiff is informed and believes, and therefore alleges, that heretofore and prior to April 5, 1907, Camille Rodrigues-Ely and Emile Gauthier, then of the City of Paris, Republic of France, were the original, first and joint inventors of certain new and useful improvements in apparatus for perforating and cutting metals, which said invention or improvements were not known or used by others in this country before their invention or discovery thereof, or patented or described in any printed publication in this or any foreign country before their invention or discovery thereof, or more than two years prior to their application hereinafter mentioned for letters patent of the United States, and which had not been in public use or on public sale in this country for more than two years prior to their said application and which had not been abandoned; that said Camille Rodrigues-Ely and Emile Gauthier, being as aforesaid the original, first and joint inventors of said invention or improvements, did on or about April 5, 1907, file in the United States Patent Office an application in writing to the Commissioner of Patents for the grant of letters patent thereon and duly complied in all respects with the condition and requirements of the statutes of the United States, and that on the 24th day of December, 1907, letters patent of the United States, No. 874,666, were duly issued to the said Camille Rodrigues-Ely and Emile Gauthier in the name of the United States of America, under the [fol. 3] seal of the Patent Office and signed by the Commissioner of

Patents, whereby there are granted to them, their heirs or assigns for the term of seventeen years from the last-mentioned date the sole and exclusive right to make, use and sell said invention throughout the United States of America and the territories thereof, as by a certified copy of said letters patent in court to be produced will more fully appear; and that prior to the issuance of said patent the invention had not been patented or caused to be patented by the inventors or their legal representatives or assigns in any foreign country upon an application filed more than twelve months prior to the filing of the application in this country.

3. That the plaintiff is informed and believes, and therefore alleges, that heretofore and prior to April 5, 1907, Camille Rodrigues-Ely and Emile Gauthier then of the City of Paris, Republic of France, were the original, first and joint inventors of certain new and useful improvements in heating and welding metals, which said inventions or improvements were not known or used by others in this country, before their invention or discovery thereof, or patented or described in any printed publication in this or any foreign country before their invention or discovery thereof, or more than two years prior to their application hereinafter mentioned for letters patent of the United States and which had not been in public use or on public sale in this country for more than two years prior to their [fol. 4] said application and which had not been abandoned the said Camille Rodrigues-Ely and Emile Gauthier, being as aforesaid the original first and joint inventors of said invention or improvements, did on or about April 5, 1907, file in the United States Patent Office an application in writing to the Commissioner of Patents for the grant of letters patent thereon and duly complied in all respects with the conditions and requirements of the Statutes of the United States, and that on the 25th day of February, 1908, letters patent of the United States, No. 880,099 were duly issued to the said Camille Rodrigues-Ely and Emile Gauthier in the name of the United States of America under the seal of the Patent Office and signed by the Commissioner of Patents, whereby there was granted to them, their heirs or assigns for the term of seventeen years from the last-mentioned date the sole and exclusive right to make, use and sell said invention throughout the United States of America and the territories thereof, as by a certified copy of said letters patent in court to be produced will more fully appear; and that prior to the issuance of said patent the invention had not been patented or caused to be patented by the inventors or their legal representatives or assigns in any foreign country upon an application filed more than twelve months prior to the filing of the application in this country.

4. That, by mesne assignments in writing duly executed and delivered, namely an assignment from Camille Rodrigues-Ely and [fol. 5] Emile Gauthier, to the Davis-Bournonville Acetylene Development Company, a corporation of South Dakota, located at Pierre, South Dakota, dated October 15, 1908 and recorded in the United States Patent Office Liber F 80, at page 284 of Transfers of

Patents, and an assignment from Davis-Bournonville Acetylene Development Company to the plaintiff, dated September 20, 1917, and recorded in the United States Patent Office in Liber L 105, at page 420 of Transfers of Patents, plaintiff acquired the entire right, title and interest in and to said letters patent 874,666 and 880,099 and inventions, and is now the sole and exclusive owner of the same, as by said assignment or duly certified copy thereof ready to be produced will appear.

5. That plaintiff is informed and believes, and therefore alleges, that heretofore and prior to March 4, 1911, John Walter Whitford, then of Jersey City, in the County of Hudson, and State of New Jersey, was the original, first and sole inventor of certain new and useful improvements in welding and cutting apparatus which said invention or improvements were not known or used by others in this country before his invention or discovery thereof, or patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application hereinafter mentioned for letters patent of the United States and which had not been in public use or on public [fol. 6] sale in this country for more than two years prior to his application and which had not been abandoned; that said John Walter Whitford, being as aforesaid the original, first and sole inventor of said invention or improvements, did on or about March 4, 1911, file in the United States Patent Office an application in writing to the Commissioner of Patents for the grant of letters patent thereon, and thereafter divided the same and did on or about January 31, 1912, file a divisional application, and duly complied in all respects with the conditions and requirements of the Statutes of the United States, that by an instrument in writing, dated January 1, 1912, and recorded in the United States Patent Office in Liber E 89, at page 15 of Transfers of Patents, the said John Walter Whitford assigned the entire right, title and interest in the invention of said divisional application to the Davis Bournonville Acetylene Development Company, a corporation organized under the laws of the State of South Dakota, located at Pierre, South Dakota, authorizing and requesting the Commissioner of Patents to issue the letters patent to said Company, as by said assignment or duly certified copy thereof ready to be produced will appear, and that on the 4th day of June, 1912, letters patent of the United States, No. 1,028,410 were duly issued to the Davis-Bournonville Acetylene Development Company in the name of the United States of America under the seal of the Patent Office and signed by the Commissioner [fol. 7] of Patents, whereby there was granted to it, its successors or assigns, for the term of seventeen years from the last-mentioned date, the sole and exclusive right to make, use and sell said invention throughout the United States of America, and territories thereof, as by a certified copy of said letters patent in court to be produced will more fully appear; and that prior to the issuance of said patent the invention had not been patented or caused to be patented

by the inventor or his legal representatives or assigns in any foreign country upon an application filed more than twelve months prior to the filing of the application in this country.

6. That, by an assignment in writing duly executed and delivered, from the said Davis-Bournonville Acetylene Development Company to the plaintiff, dated September 20, 1917 and recorded in the United States Patent Office in Liber F 105, at page 420 of Transfers of Patents, plaintiff acquired the entire right, title and interest in and to said letters patent 1,028,410 and inventions, and is now the sole and exclusive owner of the same, as by said assignment or duly certified copy there*fore* ready to be produced will appear.

7. That plaintiff has invested and expended large sums of money and has to great trouble in and about said inventions for the purpose of introducing the same into use and making the same profitable to itself and useful to the public, and that said inventions have been and are of great benefit and advantage to the plaintiff [fol. 8] and to the public, and that the public has generally acknowledged and acquiesced in plaintiff's rights under the patents, and plaintiff believes that it will realize and receive large gains and profits therefrom if infringements by said defendant and its confederates shall be prevented.

8. That plaintiff has given notice to the public that its torches are patented by marking the same patented with the dates and numbers of its patents.

9. Upon information and belief that said defendant, well knowing the premises, since the grants of said letters patent and after the assignments to the plaintiff as aforesaid and before the commencement of this suit, has infringed, and is now infringing, said patents within the Southern District of New York and elsewhere within the United States, by making, using and selling welding and cutting torches embodying the said patented inventions, and by selling such infringing torches for use in the Southern District of New York through its agent in said District, and threatens to continue to do so.

10. That the inventions of all said patents are susceptible of conjoint use and are so used in the torches complained of.

Wherefore plaintiff prays for an injunction perpetually restrain- [fol. 9] ing the defendant, its agents, servants and workmen, from further infringement of said patents, and for an accounting of damages and profits, and for such other and further relief as the equity of the case may require.

May it please your Honours to grant unto the plaintiff not only a writ of injunction, but also a writ of subpœna, to be directed to said defendant, The Alexander Milburn Company, commanding it

to appear and make answer to this bill of complaint, but not under oath, the oath being hereby expressly waived.

Davis-Bournonville Company. B. De Witt V. D. Reiley, Vice-President. Reily & Harrison, Solicitors for Plaintiff.

[fol. 10] Jurat showing the foregoing was duly sworn to by De Witt V. D. Reilley omitted in printing.

[fol. 11] IN UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER—Filed March 30, 1922

The Answer of The Alexander Milburn Company, Defendant, to the Bill of Complaint of Davis-Bournonville Company, Plaintiff.

This defendant now and at all times hereafter saving and reserving unto itself all benefit and advantage of exception which can or may be had or taken to the many errors, uncertainties and other imperfections in the said plaintiff's bill of complaint contained, for answer thereto, or so much thereof as it is advised is material or necessary for it to make answer unto, answering says:

1. It is without knowledge whether plaintiff is a corporation organized and existing under the laws of the State of New York, having offices at 149 Broadway, New York City, New York, and at Jersey City, New Jersey; defendant admits that it is a corporation organized [fol. 12] under the laws of the State of Maryland and having a regularly established place of business at Grand Central Palace, New York, N. Y.

2. This defendant denies that heretofore and prior to April 5th, 1907, or at any other time or times, Camille Rodrigues-Ely and Emile Gauthier, within the meaning of the Statutes of the United States then in force, were the original or first or joint inventors of certain alleged improvements in apparatus for perforating and cutting metals and entitled to a patent thereon under the provisions of such statutes in manner and form as alleged in paragraph numbered 2 of the plaintiff's bill herein; this defendant admits that on the 24th day of December, 1907 Letters Patent No. 874,666 were issued to said Camille Rodrigues-Ely and Emile Gauthier, but it is without knowledge whether an application therefor was duly filed in the Patent Office, or whether all of the requirements of the Statutes then in force were complied with, and, therefore, denies the same.

3. This defendant denies that heretofore and prior to April 5th, 1908, or at any other time or times, Camille Rodrigues-Ely and Emile Gauthier, within the meaning of the Statutes of the United States then in force, were the original or first or joint inventors of certain alleged improvements in heating and welding metals and entitled to

a patent thereon under the provisions of such statutes in manner and [fol. 13] form as alleged in paragraph numbered 3 of the plaintiff's bill herein, this defendant admits that on the 25th day of February, 1908, Letters Patent No. 880,099, were issued to said Camille Rodrigues-Ely and Emile Gauthier, but it is without knowledge whether an application therefor was duly filed in the Patent Office, or whether all of the requirements of the statutes then in force were complied with, and, therefore, denies the same.

4. This defendant is without knowledge whether said Letters Patent, numbered 874,666 and 880,099, or either of them, were duly assigned to plaintiff as alleged in paragraph numbered 4 of the said bill, and is without knowledge whether plaintiff is now the owner thereof, as alleged in said bill, and, therefore, denies the same.

5. This defendant denies that heretofore and prior to March 4th, 1911, or at any other time or times, John Walter Whitford, within the meaning of the Statutes of the United States then in force, was the original or first or sole inventor of certain alleged improvements in welding or cutting apparatus and entitled to a patent thereon under the provisions of such statutes in manner and form as alleged in paragraph numbered 5 of the plaintiff's bill herein; and this defendant is without knowledge whether the said invention was, as alleged in said paragraph, assigned to the Davis-Bournonville Acetylene Develop- [fol. 14] ment Company; this defendant admits that on the 4th day of June, 1912, Letters Patent No. 1,028,410 for improvement in blow pipes were issued to the said Davis-Bournonville Acetylene Development Company, but it is without knowledge whether an application therefor was duly filed in the Patent Office, or whether all of the requirements of the statutes then in force were complied with, and therefore, denies the same.

6. This defendant is without knowledge whether the said Letters Patent No. 1,028,410, were duly assigned to plaintiff, and is without knowledge whether plaintiff is now the sole and exclusive owner of the same, and, therefore, denies the same.

7. This defendant is without knowledge whether the plaintiff has invented or expended large or any sums of money, or has been to great or any trouble in and about said inventions for the purpose of introducing the same into use, or making the same profitable to itself or useful to the public, or that said inventions have been, or are of great or any benefit or advantage to the plaintiff or to the public, or that the public has generally acknowledged or acquiesced in plaintiff's rights under the patents, or any of them, or whether plaintiff believes or has cause to believe that it will realize or receive large or any gains or profits therefrom if infringement by this defendant or its [fol. 15] confederates shall be prevented, and, therefore, denies the same.

8. This defendant denies that the plaintiff has given notice to the public, as required by law, that its torches are patented by marking the same "patented" with the dates or numbers of its patents.

9. This defendant denies that it has ever infringed upon any right of the plaintiff's under said Letters Patent, or any of them, and denies that it has ever committed any act of injury to the plaintiff herein.

10. This defendant denies that the inventions of all of said patents, or any two of them, are susceptible of conjoint use, and denies that they are so used in the cutting torches complained of, and says that the bill is therefore multifarious.

11. This defendant gives notice that at the trial of this suit, it will offer proof of the following special matters, and avers that by reason of said special matters and every one of them, said Letters Patent and every one of them are invalid and void:

A. As to the said Rodrigues-Ely and Gauthier Patent No. 874,666:

(a) That said Rodrigues-Ely and Gauthier were not the original or first inventors or discoverers of that which is patented by said pat-[fol. 16] ent No. 874,666, or any material or substantial part thereof, but that, on the contrary, prior to their supposed invention or discovery, the things patented by said patent, and all material and substantial parts thereof, had been patented and described in each of the following letters patent, and that the description contained in each of the same had been published as a printed publication; the name of the patentee of each of said letters patent, and the number and date when granted and when published as a printed publication, being as follows, to wit:

United States Letters Patent

Number	Date	Name
135,895	Feb. 18, 1873	A. E. Delouest.
163,087	May 11, 1875	L. J. Marey.
703,940	July 1, 1902	H. A. E. Menne.
705,418	July 22, 1902	H. A. E. Menne.
713,421	Nov. 11, 1902	Fouche.
804,002	Nov. 7, 1905	E. Fouche.
808,382	Dec. 26, 1905	F. Jottrand.
831,078	Sept. 18, 1906	F. Jottrand.

and in the specifications and drawings filed in the United States Patent Office with the applications for said Letters Patent, and each of them.

[fol. 17] French Letters Patent

Number	Date published	Name
349,132.....	May 12, 1905.....	Societe Anonyme L'Oxhydrique Francaise.
344,531.....	Nov. 7, 1904.....	P. Dumesnil.
325,403.....	Oct. 18, 1903.....	Fouche.
Addition 1801 (to 325,403).....	Oct. 24, 1903.....	—— ——.
Addition to 2076 (to 325,403).....	Dec 16, 1903.....	—— ——.
Addition 2319 to 325,403).....	Mar. 3, 1904.....	—— ——.
333,119.....	July 21, 1906.....	E. Odam.
364,466.....	Aug. 3, 1906.....	Campagnie Francaise de Acetylene.

German Letters Patent

Number	Date published	Name
189,725.....	Nov. 11 1905.....	R. H. Katz.

(b) That prior to any supposed invention or discovery by said [fol. 18] Rodrigues-Ely and Gauthier of that which is patented by said patent No. 874,666, the things patented thereby and all material and substantial parts thereof had been described, printed and published in the following printed publications, to-wt:

The London & Edinburgh Philosophical Magazine and Journal of Science, Volume 11, January to June, 1833, pages 57 to 60.

Circular of L' Oxhydrique Francaise, entitled "Decoupage Rapide de l' Acier, du Fer, etc. Paris, January 1906."

(c) That prior to any supposed invention or discovery by said Rodrigues-Ely and Gauthier, the things patented by the said patent No. 874,666, and all material and substantial parts thereof, had been invented and used by and known to and in public use and sale in the United States by each of the following named persons, the residence of each and the place where he used the same, being stated in connection with his name, to-wit:

John Harris and the Harris Calorific Company, of Cleveland, Ohio, at said Cleveland, and elsewhere in the United States.

(d) That said Letters Patent No. 874,666 did not disclose or show any patentable invention whatsoever in view of the state of the art in welding and cutting torches as known and practiced at the time said Rodrigues-Ely and Gauthier made their alleged invention, described in said letters patent, and particularly in view of the then generally [fol. 19] known and used burners of the ordinary Argand, Daniell and Bunsen type, and of the above cited prior patents, publications and prior uses, and the hereinafter recited publications illustrating the state of the art.

(c) That the alleged invention of Rodrigues-Ely and Gauthier, as set forth in said letters patent No. 874,666, is inoperative and of no useful purpose and has not been and could not be successfully used, and that the same is not in said patent described in such full, clear, concise and exact terms as to enable any person skilled in the art to which it appertains, or to which it most nearly appertains to make or use the same, nor is there in said patent particularly pointed out or claimed the part, improvement or combination which is claimed as the alleged invention or discovery.

B. As to said Rodrigues-Ely and Gauthier patent No. 880,099:

(a) That said Rodrigues-Ely and Gauthier were not the original or first inventors or discoverers of that which is patented by said patent No. 880,099, or any material or substantial part thereof, but that, on the contrary, prior to their supposed invention or discovery, the things patented by said patent, and all material and substantial parts thereof, had been patented and described in each of the following letters patent, and that the description contained in each of the same had been published as a printed publication; the name of the patentee of each of said letters patent, and the number and date [fol. 20] when granted and when published as a printed publication, being as follows, to-wit:

United States Letters Patent

Number.	Date.	Name.
140,465	July 1, 1873	J. Burns.
163,087	May 11, 1875	L. J. Marcy.
165,095	June 29, 1875	W. R. Hanks.
517,870	Apr. 10, 1894	W. Lawson.
597,057	Jan. 11, 1898	E. J. Dolan.
589,342	Aug. 31, 1897	E. J. Dolan.
629,061	July 18, 1899	G. & J. W. Bray.
644,799	Mar. 6, 1900	W. Hahn.
713,421	Nov. 11, 1902	Fouche.
804,002	Nov. 7, 1905	E. Fouche.
808,382	Dec. 26, 1905	F. Jottrand.

and in the drawings and specifications filed in the United States Patent Office with the application for said Letters Patent and each of them.

British Letters Patent

Number.	Date.	Name.
12,750	Nov. 7, 1905	P. Dumesnil.
14,306	July 13, 1901	Garuti.

French Letters Patent

Number.	Date published.	Name.
344,531	Nov. 7, 1904	Dumesnil.
363,119	July 21, 1906	E. Odam.
367,647	Nov. 6, 1906	Societe Anonyme per Imprese d'-Illuminazione.

[fol. 21]

German Letters Patent

Number.	Date.	Name.
189,725	Nov. 11, 1905	R. H. Katz.

(b) That prior to any supposed invention or discovery by said Rodrigues-Ely and Gauthier of that which is patented by said patent No. 880,099, and more than two years prior to the application for said patent, the things patented thereby and all material and substantial parts thereof had been described, printed and published in the following printed publications, to-wit:

Acetylene, by V. B. Lewes, New York, The Macmillan Company, 1900; pages 534 to 564.

Lighting by Acetylene, by W. E. Gibbs, New York, D. Van Nostrand Company, 1898; pages 95 to 102.

Rapport due Bureau Veritas de Paris, entitled "La Soudure Autogene des Metaux, Paris, 7 July, 1905".

Circular of L'Oxhydrique Francaise, entitled "La Soudure Autogene des Metaux, Conditions pour obtenir une bonne Soudure, Paris, 1906".

Article by Andre Beltzer in Electro Chemical and Metallurgical Industry, New York, for July 1906, entitled "Autogenous Welding of Metals by the Oxy-Acetylene Blowpipe and a new Method of Generating Oxygen."

(c) That said Letters Patent, No. 880,099, did not disclose or show any invention whatsoever in view of the state of the art in [fol. 22] welding and cutting torches as known and practiced at the time said Rodrigues-Ely and Gauthier made their alleged invention, described in said Letters Patent, and particularly in view of the general use in the United States of acetylene lighting apparatus, and of the above cited prior patents and publications, and the hereinafter recited publications illustrating the state of the art.

(d) That the alleged invention of Rodrigues-Ely and Gauthier, as set forth in said Letters Patent No. 880,099 is inoperative and of no useful purpose and has not been and could not be successfully used and that the same is not in said patent described in such full, clear, concise and exact terms as to enable any persons skilled in the art to which it appertains or to which it most nearly appertains to make or use the same, nor is there in said patent particularly pointed out or claimed the part, improvement or combination which is claimed as the alleged invention or discovery.

C. As to said Whitford patent No. 1,028,410:

(a) That the said John Walter Whitford was not the original, first or sole inventor or discoverer of that which is patented by said patent No. 1,028,410, or any material or substantial part thereof, but that, on the contrary, prior to his supposed invention or discovery, the things patented by said patent, and all material and substantial parts thereof, had been patented and described in each of the follow-
[fol. 23] ing letters patent, and that the description contained in each of the same had been published as a printed publication; the name of the patentee of each of said letters patent, and the number and date when granted and when published as a printed publication, being as follows, to-wit:

United States Letters Patent

Number.	Date.	Name.
935,458	Sept. 28, 1909	R. E. Bruckner.
992,156	May 16, 1911	H. Brousseau.
831,078	Sept. 18, 1906	F. Jottrand.
969,875	Sept. 13, 1910	C. Johnson.
969,487	Sept. 6, 1910	R. W. Magna & G. W. Carpenter
981,342	Jan. 10, 1911	J. F. Williams.
853,634	May 14, 1907	J. Harris.
894,195	July 28, 1908	C. Delcampe.
931,623	Aug. 17, 1909	E. S. Kimball.

and in the specifications and drawings filed in the United States Patent Office with the applications for said Letters Patent and each of them.

British Letters Patent

Number.	Date.	Name.
1,056	Jan. 15, 1907	Wiss.
20,915	Sept. 20, 1907	E. Odam.

[fol. 24]

French Letters Patent

Number.	Date.	Name.
349,132	Nov. 19, 1904	Societe Anonyme L'Oxhydrique Francaise.

and the various certificates of addition thereto numbered 5,889; 6,057; 6,215; 6,297; 7,610; 7,613; 7,614; 7,615, 7,617; 8,758; 8,759 and 9,375, the last numbered certificate being dated August 3, 1907.

Number.	Date.	Name.
373,368	May 13, 1907	Wiss.
363,119	July 21, 1906	E. Odam.
388,776	Aug. 21, 1908	M. Parizot.
409,757	Apr. 30, 1910	Societe Air Liquide Belge.

German Letters Patent

Number.	Date.	Name.
208,430	Jan. 28, 1908	Messer & Co.
229,346	Nov. 5, 1909	J. Ammon.

(b) That prior to any supposed invention or discovery by the said John Walter Whitford of that which is patented by said Patent No. 1,028,410, and more than two years prior to the application for said patent, the things patented thereby and all material and substantial [fol. 25] parts thereof had been described, printed and published in the following printed publication to-wit:

American Machinist for December 30th, 1909, article by W. I. Reich, entitled "A new Fusion Welding Torch and how to Weld Different Metals."

Soudre Autogene et Aluminothermie by E. Chatelain, published in 1909 at Paris, France, pages 61 to 86.

(c) That prior to any supposed invention or discovery by the said John Walter Whitford, the things patented by the said patent No. 1,028,410, and all material and substantial parts thereof, had been invented and used by and known to and in public use and sale in the United States by Frederic E. Wright of Richmond Hill, New York, such use having been made at Richmond Hill, Long Island, New York and elsewhere in the United States.

(d) That said Letters Patent No. 1,028,410, did not disclose or show any invention whatsoever in view of the state of the art in blow pipes as known and practiced at the time the said John Walter Whitford made his alleged invention, described in said letters patent, and particularly in view of the above cited prior patents, publications and prior uses, and the hereinafter recited publications illustrating the state of the art.

[fol. 26] (e) That the patentee, John Walter Whitford, unjustly obtained said Letters Patent numbered 1,028,410 for that which was in fact invented by Frederick E. Wright of Richmond Hill, Long Island, who was using reasonable diligence in adapting and perfecting the same.

12. The defendant gives notice that it will at the trial of this cause refer to the following, among other matters, in illustration of the state of the art prior to the several patents in suit:

German patent of the Coln-Musener Bergwerke-Aktien Verein, No. 137,588, dated 26 May 1901, published 1 December, 1902.

German patent of the Coln-Musener Bergwerks-Aktien Verein, No. 140,148, dated 14 January 1902, addition to German patent 137,588.

German patent of the Coln-Musener Bergwerks-Aktien Verein, No. 140,149, dated 14 January 1902, published 13 March, 1903, addition to German patent 137,588.

German patent of the Coln-Musener Bergwerks-Aktien Verein, No. 143,640, dated June 27, 1902, published 13 July, 1903, addition to German patent 137,588.

German patent of the Coln-Musener Bergwerks-Aktien Verein, No. 147,541, dated 20 April, 1902, published 30 November, 1903, addition to German patent 137,588.

British patent of Boult No. 14,146 of 1901, dated 11th July, 1901.

The London and Edinburgh Philosophical Magazine and Journal of Science, Vol. II January to June, 1833, pages 57 to 60.

[fol. 27] First Principles of Chemistry by Benjamin Silliman, Philadelphia, H. C. Peck and Theo. Bliss, 1856; pages 244 to 246.

Elements of Chemistry, by Alonzo Grey, New York, Mark H. Newman & Co., 1848; pages 160 and 161.

Zeitschrift des Vereines Deutscher Ingenieure, 483, July-September, 1904, 3 September 1904, pages 1353 and 1354.

French patent of the Societe Anonyme L' Oxhdrique Francaise No. 349,132, dated 18 January 1906.

Memoires et Comptes Rendus des Travaux de la Societe des Ingenieurs Civils de France, Paris, Hotel de la Societe 1905, Bulletin de Novembre 1905, pages 644,660.

Exposition Universelle de Liege 1905, Note sur les Appareils de la Societe Anonyme l' Oxhydrique, published by the Societe Anonyme l' Oxhydrique, Brussels, 1905.

Circulars of the Compagnie Universelle d' Acetylene entitled Eclairage a l' Acetylene and Soudure Autogene des Metaux par le Chalumeau Oxy-Acetylenigue, published by the said Company at Paris, October, 1905.

Circular of l' Oxhydrique Societe Anonyme, entitled Hydrogene et Oxygene, Soudure Autogene des Metaux, Hautes Temperatures, Brussels, 1905.

Circular of l' Oxhydrique Francaise, entitled La Soudure Autogene des Metaux, Conditions pour Obtenir une bonne Soudure, Paris, 1906.

Circular of l' Oxhydrique Francaise, entitled Decoupage Rapide de l' Acier, du Fer, etc. Paris, January 1906.

[fols. 28 & 29] Circular published by Champy Freres at the Exposition Universelle de Liege 1905, entitled "Schweissverfahren: System Fouche.

Soudre Autogene et Aluminothermie by Chatelain, published at Paris 1909, particularly pages 61 to 86 inclusive.

Revue de la Souder Autogene, Paris, No. 15, May, 1910, page 149; No. 16, June, 1910, page 159; No. 18, Aug., 1910, page 179.

This defendant therefore prays:

(a) That the bill of complaint herein be dismissed with costs to be taxed against the plaintiff.

(b) For such other and further relief as the circumstances of the case may require.

The Alexander Milburn Company, by A. Parker Smith, Its Solicitor. Watson, Coit, Morse & Grindle, Charles S. Grindle, of Counsel.

Filed March 30, 1922.

[fol. 30] IN UNITED STATES DISTRICT COURT

[Title omitted]

AMENDMENT TO ANSWER

Now comes defendant and amends its Answer in the above entitled case as follows:

1. By adding to the list of U. S. patents in paragraph A, subparagraph (a), page 5 the following:
124,869, March 19, 1872, A. W. Wilkinson.

2. By adding to the list of French patents in paragraph A, subparagraph (a) the following:
French patent of Addition 6297 Societe Anonyme L' Oxhydrique Francaise.
French patent of Addition 6057 Societe Anonyme L' Oxhydrique Francaise.
French patent No. 349,132 Societe Anonyme L' Oxhydrique Francaise.

[fol. 31] 3. Insert after paragraph (b) page 9, the following:
That the patentees Rodrigues-Ely and Gauthier were not the original and first inventors or discoverers of any material or substantial part of the thing patented by said Letters Patent No. 850,099, but unjustly obtained said Letters Patent for that which was invented by the following persons:
Cyrille Delcampe of Quincy, Mass. who filed application Ser. No. 362,230, March 13, 1907, which eventuated into patent No. 847,492, December 24, 1907, who was using reasonable diligence in adapting and perfecting the same.
John Harris of Cleveland, Ohio, who filed application Ser. No. 284,596, October 27, 1905, which eventuated into patent No. 853,634, May 14, 1907, who was using reasonable diligence in adapting and perfecting the same.

4. By adding to the list of U. S. patents in paragraph C, subparagraph (a) page 10 the following:
677,686, July 2, 1901, J. McLoughlin.
140,165, June 24, 1873, J. & T. D. Richardson.

By adding to the list of French Letters patent on page 11 the following:

406,626, Feb. 4, 1910, Societe Anonyme L'Oxhydrique Francaise.

5. By inserting after sub-paragraph (c) page 12 the following:

[fol. 32] That prior to any supposed invention or discovery by the said John Walter Whitford, the things patented by said patent No. 1,028,410 and all material and substantial parts thereof, had been invented and used by, and known to, and in public use and on sale in the United States by the following persons and at the following places:

William I. Reich, of New York, N. Y., who filed application Ser. No. 479,131 on February 20, 1909 which eventuated into patent No. 1,097,263, May 19, 1914, such use and sale having been made in New York, N. Y. and elsewhere in the United States.

6. By substituting for sub-paragraph (e) page 12:

(e) That the patentee, John Walter Whitford, was not the original and first inventor or discoverer of any material or substantial part of the thing patented by said Letters Patent No. 1,028,410, but unjustly obtained said Letters Patent for which was in fact invented by the following persons:

William I. Reich of New York, N. Y., who filed application Ser. No. 479,131, February 20, 1909, which eventuated into patent No. 1,097,263, May 19, 1914, who was using reasonable diligence in adapting and perfecting the same;

Harry Brousseau of New York, N. Y., who filed application Ser. No. 501,865 on June 12, 1909, which eventuated into patent No. 992,156, May 16, 1911, who was using reasonable diligence in adapting and perfecting the same.

[fols. 33-141] Harlan A. Clifford of Jersey City, N. J. who filed application Serial No. 605,741, January 31, 1911, which eventuated into patent 1,016,613, February 6, 1912 who was using reasonable diligence in adapting and perfecting the same.

Frederic E. Wright, of Richmond Hill, Long Island, N. Y., who filed application Serial No. 604,972, on January 27, 1911, which eventuated into patent No. 1,060,393, April 29, 1913, who was using reasonable diligence in adapting and perfecting the same.

The Alexander Milburn Company, by A. Parker Smith, Solicitor. J. A. Watson, of Counsel.

[fol. 142] IN UNITED STATES DISTRICT COURT

REBUTTAL PROOFS

JOSEPH F. BRANDENBERG, called as a witness on behalf of the plaintiff in rebuttal, having been duly sworn, testified as follows:

Direct examination by Mr. Edmonds:

Q. 1. Mr. Brandenburg, you acted as patent solicitor for the Davis-Bournonville Company through a number of years, I believe?

A. Yes, I became connected with the Davis-Bournonville Company as its patent solicitor shortly after the company was formed or shortly after the enterprise was started and continued through.

Q. 2. You prepared and filed the application for the Whitford patent in suit?

A. Yes.

Q. 3. What is the patent that I now hand you?

A. This is a certified Patent Office copy of the application for that patent.

Q. 4. That particular file wrapper is the file wrapper of patent No. ——.

A. 1,028,166.

[fol. 143] Q. 5. And the patent in suit is the Whitford patent 1,028,410?

A. Yes. An application was filed originally which covered the subject matter of patents 1,028,410 and 1,028,166, and that application was divided and 1,028,410, eventuated from the divisional application.

Q. 6. And what was the date of filing the parent application?

A. The date of filing of the parent application was March 4, 1911.

Mr. Edmonds: I offer in evidence this certified copy of the file wrapper of the parent application.

(Marked Plaintiff's Exhibit No. 22.)

By Mr. Edmonds:

Q. 7. At whose instruction did you prepare and file the application for the original parent patent?

A. That was at the instruction of the Davis-Bournonville Company and I am quite sure that the instruction came from Mr. Davis personally.

Q. 8. What did you do preliminary to preparing this application?

A. I went to the shop in Jersey City and spent some time there studying the invention and going over the matter with those there and I ascertained who was the inventor and I proceeded to prepare the application in the regular way.

Q. 9. You know, as a matter of fact, don't you, that Mr. Clifford whose patent was offered in evidence was an employee of the Davis-[fols. 144-200] Bournonville Company at about that time? I refer to the Clifford patent No. 1,016,613 granted to Harlan A. Clifford?

IN UNITED STATES DISTRICT COURT

Plaintiff's Exhibit No. 4
Whitford Patent 1,028,410

201

202

J. W. WHITFORD.

BLOWPIPE.

APPLICATION FILED JAN. 31, 1912.

1,028,410.

Patented June 4, 1912.

Fig. 3.

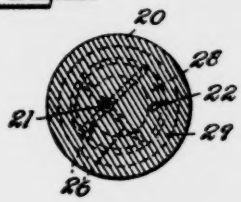


Fig. 1.

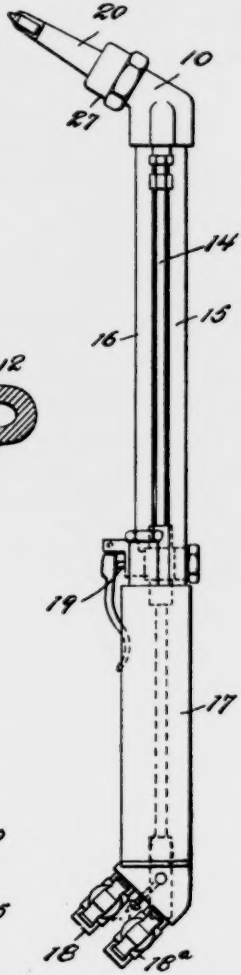


Fig. 2.

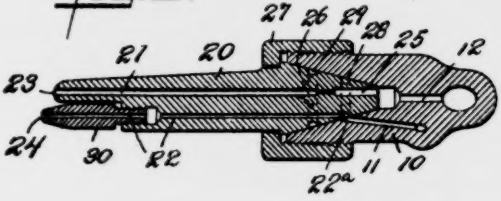
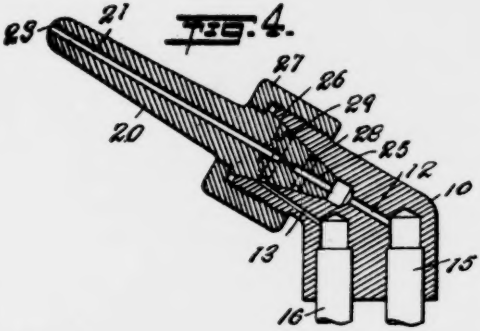


Fig. 4.



Witnesses:
G. Robert Thomas
Whitford Russell

Inventor
John Walter Whitford
By his Attorney
J. B. Lambert

UNITED STATES PATENT OFFICE.

JOHN WALTER WHITFORD, OF PONTIAC, RHODE ISLAND, ASSIGNOR TO DAVIS-BOURNONVILLE ACETYLENE DEVELOPMENT COMPANY, OF PIERRE, SOUTH DAKOTA, A CORPORATION OF SOUTH DAKOTA.

BLOWPIPE.

1,028,410. Specification of Letters Patent. Patented June 4, 1912.

Original application filed March 4, 1911, Serial No. 612,189. Divided and this application filed January 31, 1912. Serial No. 674,496.

To all whom it may concern:

Be it known that I, JOHN WALTER WHITFORD, a citizen of the United States, and resident of 23 East street, Pontiac, county of Kent, and State of Rhode Island, have invented certain new and useful Improvements in Blowpipes, of which the following is a specification.

This invention relates to apparatus for cutting metals by means of a jet of oxygen accompanied by a jet or jets of combustible mixture affording a heating flame or flames for bringing the metal to a temperature at which it is acted upon by the oxidizing jet to effect a rapid cutting or puncturing. The success of cutting operations performed with such apparatus depends directly on the maintenance of exact proportions between the combustible and combustion-supporting gases forming the heating jet, and on varying the heating and cutting jets appropriately for different kinds or grades of work. The size of the jets and the quantities of gases consumed depend on the sizes of the passages and the pressures available or expedient; and therefore it has been determined that for work of different kinds jet orifices or passages of different sizes should be employed. Furthermore, a change in the size of the heating jet orifice or passage should be accompanied by a change in the provisions or structures for effecting mixing of the gaseous constituents, with a view to preserving the fixed ascertained ratio between the constituents and securing the proper velocity for the jet. To secure these results complete separate apparatuses may be provided, each adapted to perform a certain kind or grade of work; or a plurality of interchangeable parts containing jet passages and orifices and mixing provisions may be provided for use with a common body or supporting part, containing supply conduits. The latter is more desirable, but it is an important desideratum to prevent leakage or improper mixing of the gases, else the relations essential to successful results are destroyed, and to guard against error in securing the proper combination for any particular piece of work, which would obviously have the same disastrous result. For these reasons, and also in order that there may be a maximum of convenience in using the apparatus, it is very desirable to avoid the necessity of handling a considerable number of parts in assembling or disassembling and in changing or adjusting the apparatus for different kinds of work. The various kinds of cuttting apparatus heretofore devised have been defective in one or more of these particulars.

It is the object of this invention to provide an apparatus of the fewest parts and of maximum convenience and reliability.

The apparatus comprises a head or suitable support or body part, and a unitary removable and replaceable tip socketed into the head. This unitary tip has in it both a heating jet passage, or passages, and a cutting jet passage, with delivery orifices at the front end of the tip. The cutting jet passage has an inlet at the rear end of the unitary tip, and the heating jet passage has separate inlets at the rear end of the tip for the two kinds of gases to form the heating mixture. The head is provided with three separate conduits for the gas for cutting and the combustible and combustion-supporting gases, these conduits communicating with the three kinds of inlets in the unitary gas-mixing and jet-delivering tip. The heating and cutting jet passages with their delivery orifices and the inlets are all properly proportioned in each tip, and are all changed with each exchange of tips. A series of tips differently proportioned as to their parts for different kinds of work are preferably provided for each head. Furthermore, the tip and head are provided at their socketed joint with coöperating sealing seats which prevent all improper mixing of the gases due to leakage as well as loss of the gases into the atmosphere. Thus there is only one tight joint to be effected at each change. In effect these seats afford seals between the several gases and between the gases and the atmosphere at the joint, and these seals are preferably conical, having the same generatrix, or of other form so that all of the seals must be effected simultaneously and of equal tightness. The seals, when conical in form, are of a conicity greater than the critical angle of sticking, so that the tip cannot be jammed in the head no matter how hard the head and tip may be forced together by a screw union or other holding means.

The gases preferably employed are oxygen for the cutting jet, and oxygen and acetylene for the heating jet.

In the accompanying drawings illustrating the invention: Figure 1 is a side elevation of one form of hand torch in which the invention may be embodied; Fig. 2 is a longitudinal section through the head and unitary tip, in a plane at right angles to that of Fig. 4; Fig. 3 is an enlarged cross-section through the rear conical part of the tip, looking toward the rear extremity thereof, certain annular channels and inlet passages being indicated by dotted lines; and Fig. 4 is a vertical longitudinal section through the head and tip.

While the invention is shown embodied in a hand torch, it will be understood that this is by way of illustration only and that the structure is equally applicable to mechanically supported, guided or operated cutting apparatus.

The head 10 may be of any suitable form. It is here shown of a simple construction suitable for hand torches, but it may be of a form suitable for mechanical or "automatic" apparatus. It is preferably a simple casting, and contains three separate gas conduits 11, 12 and 13, for oxygen for cutting, oxygen for the heating jet and acetylene for the heating jet, respectively. These conduits are continuations of conduits or pipes, 14, 15 and 16, which with the casing 17 constitute a suitable handle for the torch. Suitable valves 18, 18ª and 19 control these supply conduits, which in operation are connected with sources of gas supply by flexible tubing. The sources of gas supply for the three conduits are preferably all distinct, and the gases will be delivered under appropriate pressures.

20 is the unitary tip, which contains all the passages, inlets and discharge orifices necessary to the delivery of the heating and cutting jets and to the formation of the heating mixture, constituting a single member which is applied to and removed from the head as a unit. It has a longitudinal heating jet passage 21 and a longitudinal cutting jet passage 22, terminating at the forward end of the tip in delivery orifices 23 and 24, spaced laterally from each other at an appropriate distance, and preferably though not necessarily in parallel relation. The cutting jet orifice is preferably in a plane nearer the work than the heating jet orifice, in accordance with established practice. The cutting jet passage 22 has an inlet 22ª in the rear portion of the unitary tip communicating with the conduit 11 in the head. The heating jet passage 21 has two kinds of inlets in the rear part of the unitary tip, there being separate inlets for the two kinds of gases to form the combustible mixture. The arrangement of the inlets or inlet passages may be varied as desired. A desirable arrangement is illustrated, in which there is an oxygen inlet 25 opening through the rear extremity of the tip in alinement with the passage 21, and lateral inlets or passages 26 for acetylene, opening through the side of the rear portion of the tip and delivering into the passage 21 beyond the inlet 25. There may be any suitable number of acetylene inlets, four being indicated in Fig. 3; and they may be inclined to the passage 21. The inlet 25 communicates with the conduit 12 in the head, and the inlets 26 with the conduit 13. The several passages, orifices and inlets in each tip will be proportioned in accordance with the principles known in the art and the particular result desired to be obtained.

The head 10 is socketed for the reception of the tip 20 and this socket and the rear portion of the tip which enters it are formed with smooth sealing seats or surfaces preventing all improper mixing of the gases by leakage or escape thereof into the atmosphere. Thus, it will be seen that in changing the cutting and heating jets for different kinds of work it is necessary to effect only one gas-tight joint. Preferably this joint is a conical one, the conicity being such that the tip cannot become immovably jammed in the head, irrespective of the degree of pressure applied by the separate screw coupling 27, or other suitable uniting means. The lateral inlets 22ª and 26 open through the conical sealing portion of the tip, and ample areas of the sealing surfaces on the head and tip are afforded between these inlets and between them and the inlet 25 on the one hand and the front end of the head on the other, to insure that there can be no leakage of the gases either into the atmosphere or so as to mingle with each other before entering the tip. Preferably annular channels 28 and 29 are formed in the conical sealing surface of the tip, for the purpose of establishing communication at all times between the inlets 22ª and 26 and their supply conduits 11 and 13.

The unitary tip 20 may be of one piece, but I have illustrated a delivery nozzle 30 for the cutting jet formed of a separate piece from the main body of the tip and secured thereto, as by screw-threads, so as to form a part thereof. This is desirable because the projecting cutting jet nozzle may become burned or otherwise damaged, in which case it may be renewed without discarding the whole tip.

The manner of cutting metals by means of heating and cutting jets is well understood and need not be discussed here.

While I have illustrated and described one embodiment of my invention with considerable particularity, it will be understood, that numerous changes may be made

without departing from the spirit of the invention.

This invention constitutes a division of my application filed March 4, 1911, Serial No. 612,189, for welding and cutting apparatus, which covers certain features applicable to both welding and cutting apparatus and the specific claims of which are limited to welding apparatus.

What I claim as new is:

1. Apparatus for cutting metals by means of gases, comprising a socketed head and a removable and replaceable tip having a readily separable conical sealing joint, and means for holding them together, said head having three separate conduits opening into its socket for gases to form a combustible mixture and oxygen for cutting, respectively, and said tip having heating jet and cutting jet passages, said heating jet passage having separate inlets communicating with two of the conduits in the head and said cutting jet passage having an inlet communicating with the third conduit, two kinds of these inlets opening through the conical portion of the tip which with the conical surface of the socket affords gas-tight seals preventing leakage of the three kinds of gases.

2. Apparatus for cutting metals by means of gases, comprising a socketed head and a removable and replaceable tip having a readily separable conical sealing joint, and means for holding them together, said head having three separate conduits opening into its socket for gases to form a combustible mixture and oxygen for cutting, respectively, and said tip having heating jet and cutting jet passages, said heating jet passage having separate inlets communicating with two of the conduits in the head and said cutting jet passage having an inlet communicating with the third conduit, one inlet opening through the rear extremity of the tip and the other two kinds of these inlets opening through the conical portion of the tip which with the conical surface of the socket affords gas-tight seals preventing leakage of the three kinds of gases.

3. Apparatus for cutting metals by means of gases, comprising a socketed head and a unitary removable and replaceable tip, said head having three separate conduits for gases to form a combustible mixture and oxygen for cutting, respectively, and said unitary tip being provided therein with a cutting jet passage having a delivery orifice at the forward part of the tip and communicating at the rear part of the tip with the corresponding conduit in the head and with a heating jet passage having a delivery orifice at the forward part of the tip and separate inlets in the rear part of the unitary tip communicating with the corresponding conduits in the head, the head and tip being provided at the joint between the two with coöperating sealing seats which prevent leakage and all improper mingling of the gases.

4. In a device of the character described, a tip having a longitudinal mixing passage with a discharge orifice and separate inlets at the rear for leading different kinds of gases to said passage, said tip being provided also with an independent longitudinal passage, a socketed head provided with separate conduits for the two kinds of gases for combustion communicating respectively with the two kinds of inlets, said head being provided also with a conduit for supplying gaseous fluid to said independent longitudinal passage, said tip and head being provided with similar external and internal conical seats for sealing, there being separate annular passages formed between said conical seats for placing said independent longitudinal passage and one kind of said inlets, respectively, in communication with their conduits in the head.

5. In a device of the character described, a tip having a longitudinal mixing passage with a discharge orifice and a longitudinal inlet and lateral inlets for leading different kinds of gases to said passage, said tip being provided also with an independent longitudinal passage discharging at the forward part of the tip, and a socketed head provided with separate conduits for the two kinds of gases for combustion opening, respectively, through the rear and side of said socket and communicating with said lateral and longitudinal inlets, said head being provided with another side conduit for supplying gaseous fluid to said independent longitudinal passage, said tip and head being provided with similar external and internal conical seats for sealing, there being separate annular passages formed between said conical seats for placing said independent longitudinal passage and the lateral inlets, respectively, in communication with their conduits in the head.

6. A device of the character described, comprising a head and a removable and replaceable tip carried and supplied thereby, said head and the rear part of the tip having coöperating sealing surfaces formed thereon, said tip being provided with a mixing passage, a discharge orifice therefor at the forward part of the tip and inlets to the mixing passage for the two kinds of gases to be mixed leading from said rear part of the tip, said tip having also therein a longitudinal passage which is independent of said mixing passage and has its inlet at said rear part of the tip and its outlet at the forward part of the tip, and said head being provided with three separate conduits which communicate, respectively, with the two kinds of inlets to the mixing passage and the

inlet to said independent passage, said sealing surfaces forming seals between the gases from the three conduits where the conduits communicate with the said inlets and also between the gases and the atmosphere.

7. A device of the character described, comprising a head and a removable and replaceable tip carried and supplied thereby, said head and the rear part of the tip having coöperating sealing surfaces formed thereon, said tip being provided with a mixing passage, a discharge orifice therefor at the forward part of the tip and inlets to the mixing passage for the two kinds of gases to be mixed leading from said rear part of the tip, said tip having also therein a longitudinal passage which is independent of said mixing passage and has its inlet at said rear part of the tip and its outlet at the forward part of the tip, and said head being provided with three separate conduits which communicate, respectively, with the two kinds of inlets to the mixing passage and the inlet to said independent passage, said sealing surfaces having spaced annular communication-establishing grooves formed therein, and portions of the said surfaces at opposite sides of the grooves constituting seals between the different kinds of gases and between the gases and the atmosphere.

8. A device of the character described, comprising a head and a removable and replaceable tip having a mixing passage with an outlet at the forward part of the tip and inlets at the rear part of the tip for the two kinds of gases to be mixed, said tip having also a longitudinal passage independent of the mixing passage having an inlet at the rear part of the tip and discharging at the forward part thereof, the head being provided with three conduits for supplying the inlets to the mixing passage and said independent passage.

In witness whereof I have signed my name in the presence of two subscribing witnesses.

JOHN WALTER WHITFORD.

Witnesses:

CARL A. PEARSON,

JOHN A. PEARSON.

A. Yes, he was an employee at about that time or a little earlier.

Q. 10. And when you made this investigation to which you referred to ascertain who was the inventor of this particular torch, there was no influence of any kind involved in filing in the name of one man rather than another?

A. Oh, none whatever. I made the usual inquiry as to who was the inventor and filed the application accordingly.

Cross-examination by Mr. Watson:

X Q. 11. Did you personally ask Mr. Clifford if he was the inventor?

A. I don't remember whether I asked Mr. Clifford whether he was the inventor or not. I don't remember whether Mr. Clifford was there at the time.

X Q. 12. As a matter of fact, you were told who was the inventor without any inquiry on your part, were you not?

A. No, sir, I made the usual inquiry as I always do and I went to the Davis-Bournonville Company plant and took this matter up there.

X Q. 13. Who did you make the inquiry of?

A. It is some time ago. I don't remember of whom I inquired.

X Q. 14. You don't remember whether you talked with Mr. Clifford or not?

A. No.

(Here follows Plaintiff's Exhibit No. 4, Whitford patent, marked side folio pages 201-206; side folio pages 207-293 omitted in printing.)

[fol. 294] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT No. 22

Department of the Interior,
United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the File Wrapper and Contents, in the matter of the Letters Patent of John Walter Whitford, Assignor to Davis-Bournonville Acetylene Development Company, -r 1,028,166, Granted June 4, 1912, for improvement in Welding or cutting Apparatus.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twenty-second day of November, in the year of our Lord, one

thousand nine hundred and twenty-three and of the Independence of the United States of America the one hundred and forty-eighth.

Karl Fenning, Acting Commissioner of Patents. (Seal.)

C.

[fol. 295] Div. 30

1911

(Ex'r's Book:) 35.10.

Number (Series of 1900): 612,189.
Patent No. 1,028,166.
Name: John Walter Whitford, Ass'or to Davis-Bournonville Acetylene Development Company, of Pierre, S. Dak. a Corp. of S. Dak.
Of Jersey City,
County of —— ——,
State of New Jersey.
Invention: Welding or Cutting Apparatus.

Parts of application filed.	Original.	Renewed.
Petition,	Mar. 4, 1911.	——, 191-.
Affidavit,	" " 1911.	——, 191-.
Specification,	" " 1911.	——, 191-.
Drawing,	" " 1911.	——, 191-.
Model or Specimen,	191-.	——, 191-.
1. First Fee, Cash, $15,	Mar. 4, 1911.	——, 191-.
" " Cert.,	—— 191-.	——, 191-.
Appl. filed complete	Mar. 4, 1911.	——, 191-.
Examined: N. R. Sulivan, Ex.	Nov. 13, 1911.	
Allowed: M. M. Mortimer, For Commissioner.	—— ——, For Commissioner.	
Notice of Allowance:	Nov. 16, 1911.	——, 191-.
4. Final Fee, Cash $20,	May 4, 1922.	——, 191-.
" " Cert.,	191-.	——, 191-.

Patented June 4, 1912.
Attorney: J. F. Brandenburg, 2 Rector St., New York, N. Y.
Associate Attorney: —— ——.
(No. of Claims 14.) Title as Allowed: Welding or Cutting Apparatus. 158-109.
[On left margin:] Division of App., No. —, filed ——, 191-.

[fol. 296] $15.00 Received Mar. 4, 1911. C. M., Chief Clerk, U. S. Patent Office

Serial No. 612,189

Petition and Power of Attorney

To the Commissioner of Patents:

Your petitioner, John Walter Whitford, a citizen of the United States and resident of Jersey City, in the county of Hudson and

State of New Jersey, whose post office address is 87 Romane Avenue, Marion, Jersey City, New Jersey, prays that Letters Patent may be granted to him for the improvements in welding or cutting apparatus, set forth in the annexed specification; and he hereby appoints J. F. Brandenburg (Register Number 5676), of No. 2 Rector Street, New York City, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.

Signed at New York City, County of New York and State of New York, this 3rd day of March, 1911.

John Walter Whitford.

[fol. 297] To all whom it may concern:

Be it known that I, John Walter Whitford, a citizen of the United States, a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Welding or Cutting Apparatus, of which the following is a specification.

This invention relates to apparatus for heating, brazing, welding or cutting, or otherwise treating, metals by means of jets of gases directed upon the work.

The apparatus is designed more especially for using oxygen and acetylene under pressure. Such a device is commonly known as an oxy-acetylene torch or blow-pipe. In such apparatus it is customary to supply a number of removable and inter-changeable tips for each torch or head, these tips varying in size and in the dimensions of the passages therein so that flames of different sizes and qualities for different kinds of work may be had.

In the form of apparatus which has proved practically successful the mixing of the combustible and combustion-supporting gases for the heeating or welding flame is effected in the tip, the gases being kept separate until after they enter the tip. In this form of apparatus it is of the greatest importance to provide sure seals at the joint between the head and tip, both to seal the different kinds of gases from each other and from leakage outside of the torch.

One of the objects of the invention is to provide improved sealing means for this purpose.

The object is, further, to provide seals for as many ducts as may lead from the head into the tip.

Another object of the invention is to provide means for leading gaseous fluid other than the oxygen and acetylene for the flame through the head into the tip.

A special object is to lead such fluid through the sealing seats [fol. 298] provided at the junction of the head and tip. Such fluid may be, for example, oxygen, usually under higher pressure than the other oxygen stream, for cutting, or air or other gaseous medium for cooling the tip and the gases passing therethrough.

The invention consists first in a detachable and interchangeable

tip having means for mixing the gases for the flame therein, and a head for supplying the tip with these gases, the tip and head being formed with similar external and internal similar abrupt-angled conical seats, in which is formed an annular channel or channels for establishing communication at all relative positions of the head and tip. This annular channel, while preferably narrow for economy of space, affords a chamber of suitable capacity for supplying the communicating inlet or inlets in the head.

The conical seats contemplated by this invention have the distinctive property of separating freely upon removal of the external axially directed pressure holding the tip to the head. Such a structure is entirely different in nature and properties from a mere gentle taper. Such a taper joint is self-holding, and the less the taper the easier it is to wedge the male member irremovable into its taper socket. Such a taper joint is therefore inoperative for an oxy-acetylene blow-pipe, one of the first requirements of which is ease in interchanging the tips. When it is considered that the head and tip are drawn together by screw means, with which there is always a tendency to exert more force than is necessary, and that the head and tip remain clamped together for periods of rest that are often considerable and during which the joint is more or less affected by heat and probably also by the gases, it will be apparent why a gently tapered joint would render a torch useless because of the jamming of the tip. But with a conical joint of sufficiently abrupt angle the [fol. 299] properties are exactly reversed. Whereas with such a taper joint as described, the greater the external compression the more the reaction of the socket, owing to friction, locks the male member against removal, with this conical joint the more the external compression the more the reaction tends to force the tip out of the socket. Hence, while with conical seats absolutely gas-tight seals may be formed at both sides of the annular channel under the action of a separate compression member, such as a screw coupling, the tip is held in place by this coupling and not by the grasp of the conical socket, and upon release of the coupling the seats separate freely. Such conical seats should, however, be formed of sufficient acuteness of angle and of sufficiently long sides to insure ample seals at both sides of the annular channel or chamber, or alternating with as many annular channels as may be employed.

The invention also consists in a torch or the like in which a gaseous fluid, other than the oxygen and acetylene for the flame, is brought into the passage therefor in the tip, through the head, and preferably through the sealing seats between the head and tip, such seats being conical as just described or even of other form. Thus, the invention includes both a novel form of air-cooled torch and a novel form of cutting torch, according to whether the gaseous fluid is air or other gaseous medium for cooling led to a suitable passage in the tip, or oxygen for cutting led to a special passage in the burner tip arranged to play upon the work.

In the accompanying drawings, showing by way of illustration certain preferred embodiments of the invention:

[fol. 300] Figure 1 is a side elevation of the torch with an air-cooled tip;

Fig.[ure]* 2 is an enlarged section through the head and tip of this form of torch;

Fig.[ure]* 3 is a section at right angles to the last, the tip being partly broken away;

Fig.[ure]* 4 is a cross-section through the rear conical portion of the tip shown in these views;

Fig.[ure]* 5 is a view corresponding to Fig.[ure]* 2, showing a welding tip without air-cooling;

Fig.[ure]* 6 is a section on a plane corresponding to that of Fig. 3 showing a cutting tip in the head; and

Fig.[ure]* 7 is a cross-section through the handle portion of the torch.

[fol. 301] In these views the numeral 10 indicates the head, which is preferably a casting of suitable form. Three sockets 11, 12 and 13 are formed in the lower portion of this head, and three pipes 14, 15 and 16 have their ends secured therein. The pipes 14 and 15 are preferably permanently, or semi-permanently secured to the head, and together with the casing 17 constitute a convenient handle for the torch. As heretofore, the portion of the acetylene pipe or conduit 15 inside this casing may be enlarged [and packed with]* ∧ for the reception of material for protecting the acetylene generator or tank from a flash-back, while the oxygen pipe 14 merely passes through the casing as a matter of convenience. The pipe 16 may be, and preferably is, detachably connected to the head, as by means of a screw coupling 18, and with the handle, as by means of a laterally-projecting arm 19 clamped in a hole by means of a screw 20. The three pipes or conduits are provided with suitable controlling valves 21, 22 and 23. The valve 23 is preferably merely a cut-off valve, but this is not material.

The sockets 11, 12 and 13, together with the three drilled passages 24, 25 and 26 leading therefrom, constitute separate conduits in the head. The front part of the head is provided with a conical socket 27 for the tip, and the three conduits open into this socket. In the preferred construction, the oxygen conduit 24 opens axially at the back of the socket, and the conduits 25 and 26 through the side of the socket, one in advance of the other.

Per D. The tip 28, [or]* 28^a ∧ 28^b has a narrow longitudinal mixing passage or drilled opening 29 ∧ 29^a encircled by thick walls. This passage has its discharge orifice at the front end of the tip so as to play upon the work. At

Per C. the rear the tip is provided with two [sets]* of inlets for leading the two kinds of gases for combustion to said kinds

[*Words and figures enclosed in brackets erased in copy.]

[fol. 302] mixing chamber. The arrangement of these inlet passages may be varied. Preferably, there is a single axial restricted inlet 30 for the oxygen and lateral inlets 31 for the acetylene. The acetylene inlets may be, and preferably are, inclinded to the mixing passage. The number and size of the inlet passages may be varied according to the particular results desired. The mixing passage 29 may be arranged axially within the tip

Insert A^1. $\wedge$ or eccentrically, $\wedge$ [both forms being shown].*
" A^2. A^1 A^2
32

The rear part $\wedge$ of the tip that enters the head is conical, the angle thereof and of the conical socket 27 being the same and comparatively abrupt. Both conical faces are preferably ground smooth. An annular passage, channel or recess 33 is formed within the area of these conical seats, being positioned so as to communicate directly with the acetylene conduit 25 and the acetylene inlets 31. Preferably, though not necessarily, this annular channel is formed in the conical tip portion 32. While narrow, this channel forms an adequate chamber or reservoir for the supply of the acetylene inlets. An oxygen chamber 34 may also be provided at the back of the socket 27. The zones of the conical seats at opposite sides of this annular channel form sure and ample seals, on the one hand sealing the oxygen and acetylene from each other before entering the tip and on the other hand sealing against leakage through the joint outside the torch.

The two forms of tip are provided also with a second annular passage 35 within the area of the conical seats, which annular passage may also be formed in the tip. This annular passage or recess communicates directly with the third conduit 26 in the head when the tip is in place. The conical seat sections at opposite sides of this annular communication-establishing passage form sure and ample inner and outer seals with respect to this passage, as in the other case. [fol. 303] In the form of tip shown in Fig. 6 the second annular passage 35 communicates with a longitudinal passage or drilled opening 36, independent of the mixing passage 29^a, which is designed to convey cutting oxygen. In the preferred construction the portion of the tip containing this oxygen passage terminates considerably short of the front end of the tip, and the passage is continued by a removable nozzle or sub-tip 37 secured to said portion, as by being screwed therein. By this means the oxygen duct is caused to discharge alongside the duct for the heating mixture, and preferably slightly in advance thereof.

In the form of tip shown in Figs. 2, 3 & 4 the annular passage 35 communicates by means of inlets 38 with a longitudinal passage 39, annular in cross-section, which surrounds the mixing

29
A, B. passage $\wedge$ [29^a].* While this sheath-like passage may be formed in a variety of ways, I prefer to secure a sleeve

[*Words and figures enclosed in brackets erased in copy.]

• 40, by forcing or otherwise, on an annular shoulder 41
body 280
D, C'. at the base of the ∧ [nozzle]* part ∧ of the tip; ∧ .
C¹

When this form of tip is used and the pipe 16 is connected up with a source of air under pressure, or other suitable cooling gas, instead of oxygen for cutting as in the other instance, a cooling envelope is caused to flow along or over the tip. In order to prevent this annular stream of air from mingling with the flame, a shield 42 is attached to or formed on the *the* front end of the tip, this shield being constructed and arranged to cause the air discharged from the passage to flow back over the tip.

In both forms of tip the base of the conical part 32 is perferably larger than the adjacent part of the tip. A coupling sleeve 43 engages threads [44]* or their equivalents on the head and by means of a flange 44 presses upon this enlarged base, so as to draw the tip [fol. 304] into the head and hold it there.

Fig.[ure]* 5 illustrates a welding tip 28ᵇ without the air-cooling feature attached to the same form of head shown in the other views. This tip is essentially similar to the other forms of tip illustrated, except that it is provided with neither the annular air passage 39 nor the cutting oxygen passage 36, and consequently lacks also the annular passage 35.

In operation, the tips are instantly attachable to or detachable from the head. The conical seats separate at once upon unscrewing of the coupling. With the same torch body, either a cutting torch, an air-cooled torch or a welding torch without air-cooling may be had, by attachin- one kind of tip or the other and by connecting with a source of air or cutting oxygen under pressure or neither, as the case may be. The oxygen and acetylene for the welding or cutting flame also preferably enter the torch under considerable pressure.

A material advantage of the torch provided with the cutting tip shown in Figure 6 is that the tip may be swiveled in the head and then clamped so as to bring the jets from the mixing passage 29ᵃ and the cutting oxygen passage 36 into alinement with the desired line of cutting, with the heating flame in the lead, the passage 36 being always in communication with the duct in the head for cutting oxygen by virtue of the annular passage 35. It is the practice to advance the heating and cutting jets along the line of the cuts with the heating jet in the lead, and in order to do this, heretofore, it has often been necessary to hold the torch in an awkward manner. With my construction the torch can be held in the most convenient manner and the cutting tip adjusted so as to cut in any direction.

While I have shown and particularly described certain embodiments of my invention, it will be understood that many substitutions, omissions and changes may be made without departing from the invention.

[*Words and figures enclosed in brackets erased in copy.]

[fol. 305] I claim:

B. blow pipe

Per B. 1. In ^ apparatus [for heating, welding or cutting metals by means of gases under pressure],* a burner tip provided with a longitudinal passage for the gaseous mixture for the flame and a conical rear portion having formed therein two sets of inlet passages for leading the two kinds of gases to said longitudinal passage, and a head provided with a conical socket and separate conduits for the two kinds of gases communicating respectively with said inlet passages, the surfaces of said conical tip portion and conical socket being formed as similar abrupt-angled freely-separable conical seats, said seats having an annular passage formed between them for placing the conduit and inlet passages for one kind of gas in communication and said seats being formed at a sufficiently acute angle and with sufficiently long sides to insure ample inner and outer gas-tight seals at the two sides of said annular passage when the parts are forced and held together in axial direction.

" " Cl. 1, Sub C².

B. blow pipe

Per. B. 2. In ^ apparatus [for heating, welding or cutting metals by means of gases under pressure],* a burner tip and a head provided with similar meeting abrupt-angled conical seats having an annular recess formed between them and affording gas-tight seals at the two sides of said recess, said tip being provided with a longitudinal mixing passage and two sets of inlets at the rear one set leading from said annular recess, said head being provided with separate conduits for the two kinds of gases for combustion communicating respectively with said annular recess and the remaining inlet or inlets, and a separate screw coupling for uniting said tip and head, said conical seats being freely separating when relieved of the pressure of said coupling.

[fol. 306] Canceled per C

B. blow pipe

Per A. 3. In ^ apparatus [for heating, welding or cutting metals by means of gases under pressure],* a removable and replaceable burner tip provided with a longitudinal passage for the gaseous mixture for the flame and a conical rear portion having formed therein two sets of inlet passages for leading the two kinds of gases to said longitudinal passage, the surface of said conical portion forming an abrupt-angled non-sticking sealing seat, said seat being provided with a narrow annular channel communicating with one set of inlet passages, said seat affording ample sealing surfaces at both sides of said annular passage.

" " metals by means of gases under pressure],* a removable and replaceable burner tip provided with a longitudinal passage for the gaseous mixture for the flame and a conical rear portion having formed therein two sets of inlet passages for leading the two kinds of gases to said longitudinal passage, the surface of said conical portion forming an abrupt-angled non-sticking sealing seat, said seat being provided with a narrow annular channel communicating with one set of inlet passages, said seat affording ample sealing surfaces at both sides of said annular passage.

[*Words and figures enclosed in brackets erased in copy.]

B. blow pipe

Per A. 4. In ∧ apparatus [for heating, welding or cutting
" " metals by means of gases under pressure],* a burner tip provided with a longitudinal mixing passage and inlets thereto for two kinds of gases, a socketed head provided with separate conduits for the two kinds of gases, said tip and head being provided with similar external and internal abrupt-angled freely-separating conical seats having annular communication-establishing means formed between them, the base of the conical portion of the tip being of a diameter larger than the part of the tip in advance thereof, and a flanged and threaded coupling for uniting said tip and head, the flange of said coupling taking over the base of said conical portion of the tip.

5. In a device of the character described, a burner tip provided with a longitudinal mixing passage and a conical rear portion having

inlet passage

Per A. formed therein a longitudinal ∧ and lateral inlet passages for leading the two kinds of gases to said mixing passage, a head provided with a conical socket and separate conduits for the two kinds of gases opening respectively through the back and side of the socket and communicating with said longitudinal and lateral inlet passages, the surfaces of said conical tip portion and conical socket being formed as similar abrupt-angled freely-separable conical [fol. 307] seats, said seats having an annular passage formed between them for placing the side conduit and lateral inlet passages in communication and said seats being formed at a sufficiently acute angle and with sufficiently long sides to insure ample inner and outer gas-tight seals at the two sides of said annular passage, and separate means for forcing the tip and head together, said tip being held in place by said means alone.

6. In a device of the character described, a passaged burner tip provided with means for mixing combustible and combustion-supporting gases therein, a socket head provided with conduits for supplying said tip, said tip and head being formed with similar external and internal abrupt-angled freely-separating conical seats, there being a plurality of annular communication-establishing channels formed between said seats, said seats affording gas-tight seals alternating with said channels, and separate means for holding said tip tightly in said head.

[Matter enclosed between rules erased in copy.]

— [7].* In a device of the character described, a tip having a longitudinal mixing passage with a discharge orifice and

separate

[two sets of]* inlets at the rear for leading different kinds of gases to said passage, said tip being provided also with an independent longitudinal passage, a socketed head provided with separate conduits for the two kinds of gases for combustion communicatnig respectively

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[*Words and figures enclosed in brackets erased in copy.]

kinds
with the two [sets]* of inlets, [and]* ^ a conduit for supplying
D¹
gaseous fluid to said independent longitudinal passage, said tip and head being provided with similar external and internal conical seats for sealing, there being separate annular passages formed between said conical seats for placing said independent longitudinal passage
one kind
and [a set]* of said inlets, respectively, in communication with their conduits in the head.

[fol. 308] — [7ª, 8].* In a device of the character described, a tip
inlet
Per A. having a longitudinal ^ mixing passage with a discharge orifice and a longitudinal and lateral inlets for leading different kinds of gases to said passage, said tip being provided also with an independent longitudinal passage discharging at the forward part of the tip, and a socketed head provided with separate conduits for the two kinds of gases for combustion opening, respectively, through the rear and side of said socket and communicating with said lateral and longitudinal inlets, said head being provided with another side conduit for supplying gaseous fluid to said independent longitudinal passage, said tip and head being provided with similar external and internal conical seats for healing, there being separate annular passages formed between said conical seats for placing said independent longitudinal passage and the lateral inlets, respectively, in communication with their conduits in the head.

— [8ª, 9].* In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of
Insert A³. gases and also an independent passage, and a head, ^
A³
the gaseous fluid for said independent passage being led thereto through the sealing seats between the tip and head.

— [9ª, 10].* In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of
Insert A⁴. gases and also an independent passage, and a head, ^
A⁴
the gaseous fluid for said independent passage being led thereto
the
through [an]* annular passage in the sealing seats between the tip and head.

11. In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also an independent passage for cutting oxygen, and a head, the cutting oxygen being supplied to said passage through the sealing seats between the tip and head.

[Matter enclosed between rules erased in copy.]

[*Words and figures enclosed in brackets erased in copy.]

[fol. 309] —. [10[a], 6[c], 12].* In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also an independent longitudinal passage for gaseous cooling fluid, a head, said head and tip having meeting sealing seats, and means for leading the gaseous cooling fluid from said head to said independent passage through said seats.

— [11[a], 7[c], 13].* In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also a longitudinal passage annular in cross-section for gaseous cooling fluid, a head, said head and tip having meeting sealing seats, and means for leading the cooling fluid from said head to said passage through said seats.

— [12[a], 8[c], 14].* In a device of the character described, a tip having a sealing seat at the rear, a mixing passage and inlets thereto for the two kinds of gases, and a longitudinal passage annular in cross-section for gaseous cooling fluid and inlets thereto from said sealing seat, and a head for supporting and supplying said tip having a sealing seat similar to the seat on the tip and a conduit opening therethrough for communication with the inlets to said cooling passage.

— [15].* In a device of the character described, a tip having a sealing seat at the rear, a mixing passage and inlets thereto for the two kinds of gases, and a longitudinal passage annular in cross-section for gaseous cooling fluid and inlets thereto from said sealing seat, and a head for supporting and supplying said tip having a similar meeting sealing seat and a conduit for cooling fluid, an annular passage being formed in the sealing seats for placing said conduit in communication with the inlets to the cooling passage in the head.

Sub. E[5].

[fol. 310] — [14a[2] 14C[5] 16].* In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also an independent passage, and a head for supplying said inlets, the gaseous fluid for said independent passage being also led through the head.

[Matter enclosed between rules erased in copy.]

Per A.

---

17. In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also an independent passage for cutting oxygen, and a head for supplying said inlets, the cutting oxygen being also led through the head.

[Matter enclosed between rules erased in copy.]

[*Words and figures enclosed in brackets erased in copy.]

Per E.

— [11C[5] 10E, 15a, 18.]* 5. In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also a longitudinal passage for gaseous cooling fluid, a head provided with conduits for supplying said inlets and another conduit therein for leading cooling fluid to said cooling passage.

Per F.

— [12 16[a], 11-E 19].* Apparatus of the character described, comprising a head, three separate conduits for gaseous fluids leading into said head, said conduits being extended separately within the head, and a tip having passages supplied by said conduits.

Insert E[6].

E[a]

[Matter enclosed between rules erased in copy.]

—. [17[a], 20].* Apparatus of the character described, comprising a head, three separate conduits for gaseous fluids leading into said head, said conduits being extended separately within the head, and a tip provided with a mixing passage and two sets of inlets thereto supplied by two of said conduits, said tip being also provided with a passage for a cooling gaseous medium, said passage being supplied by the third conduit.

Insert D[2].

Cls. 7-8.

Per A.

21. In a cutting apparatus, a tip having longitudinal passages for the combustible mixture and the cutting oxygen drilled therein, and inlets for leading different kinds of gases for the heating flame to the first of said passages, the portion of the tip having the cutting [fol. 311] passage terminating short of the front end of the tip, and a separate nozzle secured to said portion of the tip and continuing said cutting passage.

22. In a cutting apparatus, a detachable tip provided with passages for directing heating and cutting jets upon the work, a head for supporting the tip and adapted to supply said passages, and means whereby the tip may be swiveled on the head to cut in any direction while preserving communication with the ducts in the head.

[Matter enclosed between rules erased in copy.]

In witness whereof I have signed my name in the presence of two subscribing witnesses.

John Walter Whitford.

Witnesses: C. B. Wortham, Wm. W. Barnes.

[*Words and figures enclosed in brackets erased in copy.]

[fol. 312] *Oath.*

STATE OF NEW YORK,
County of New York:

John Walter Whitford, the above-named petitioner, being sworn, deposes and says that he is a citizen of the United States and resident of Jersey City, in the county of Hudson and State of New Jersey, that he verily believes himself to be the original, first and sole inventor of the improvements in welding or cutting apparatus described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvements has been filed by him or his representatives or assigns in any country foreign to the United States.

John Walter Whitford.

Sworn to and subscribed before me this 3rd day of March, 1911. Alfred E. Smith.

[fol. 313] Div. 30 Room 152

Address only "The Commissioner of Patents, Washington, D. C."

Paper No. 2

All communications respecting this application should give the serial number, date of filing, and title of invention.

A. M. F.

Department of the Interior,
United States Patent Office,
Washington, March 29, 1911.

John W. Witford, c/o J. F. Brandenburg, New York, N. Y.:

Please find below a communication from the Examiner in charge of your application Serial No. 612,189, Welding or Cutting Apparatus, filed Mar. 4, 1911.

E. B. Moore, Commissioner of Patents.

In the drawing packing material should be shown in the acetylene conduit 15, as described on page 5, line 10.

The mixing passage 29 shown in Fig. 6 should be distiguished from the mixing passage 29 shown in Fig. 2, as it differs in location from that in Fig. 2.

Page 5, line 28, tip 28^b should be mentioned along with tips 28 and 28^a.

Claim 1 is objectionable. In line 12, "passages" should be—passage-.

Claims 1, 2, 3, 4 and 5 are rejected on patent to Bruckner, 935,458, Sep. 28, 1909, 158-109. The recitation of the conical seats as abrupt-angled fails to distinguish from this reference.

Claims 1, 2, 3, 4 and 5 are also rejected on patent to Williams, 981,342, Jan. 10, 1911, 158-109.

Claim 5 is objectionable. In line 3, "a longitudinal and lateral inlet passages" is vague. Line 12, "passages" appears in error.

Claim 6 is objectionable. In line 6, "angled" is misspelled.

[fol. 314] Claim 6 is rejected as there are not sufficient elements recited to perform any useful function.

Claim 7 is rejected as applicant fails to disclose an annular passage "for placing said independent longitudinal passage * * * in communication with (its conduit) in the head."

Claim 8 is objectionable. In line 3, "a longitudinal and lateral inlets" is vague.

Claims 9, 10 and 11 are objectionable in reciting "sealing seats" inferentially and not positively.

Claims 1, 2, 3, 4, 8, 9, 10, 11, 17, 21 and 22 are specific to Fig. 6; claims 7, 12, 13, 14, 15, 18 and 20 are specific to Figs. 1 to 4; and claims 16 and 19 are specific to Figs. 1 to 4, 6 and 7.

Claims reading on but one figure of the drawing can be allowed in one application.

Claims 1, 2, 3, 4, and 7 to 22 are rejected as being for separate inventions.

E. S. Glascock. Atty. C. J. S.

[fol. 315] In the United States Patent Office

Div. 30, Room 152

In the Matter of the Application of John W. Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 9, 1911. Serial Number 612,189.

A 3, 5

May 12, 1911.

Hon. Commissioner of Patents, Washington, D. C.

SIR: Replying to Office action of March 29, 1911, the above entitled application is hereby amended as follows:

Page 5, line 10, strike out "and packed with," and insert: *for the reception of*.

Line 28, strike out "or" and insert a comma; after "28^a" insert 28^b.

Line 29, after "29," insert: *or* 29^a.

Page 6, line 8, after "tip," insert: *as shown at* 29 *in Fig.* 2; same

line strike out "both forms being shown" and insert: *as shown at* 29^a *in Fig.* 6.

Page 7, lines 3 and 15, change "29" to: 29^a.

Page 8, line 21, change "29" to: 29^a.

Claim 5 line 3, after "longitudinal" insert: *inlet passage.*

Strike out claim 6.

Claim 8, line 3 after "longitudinal" insert: *inlet.*

Claim 9, line 3 after the second comma, insert: *said head and tip being provided with cooperating sealing seats.*

Claim 10, line 3 after the second comma, insert: *said head and tip being provided with cooperating sealing seats and an annular channel formed therebetween.*

Renumber claims 7 to 10 as 6 to 9.

In claim 10, now 9, line 5, change "an" to: *the.*

[fol. 316] Strike out claim 11.

Renumber claims 12 to 16 as 10 to 14.

Strike out claim 17.

Renumber claims 18 to 20 as 15 to 17.

Strike out claims 21 and 22.

Remarks

The exact extent of the Examiner's requirement for division is not clear to the applicant, and it seems that the Examiner has misinterpreted the scope of certain of the claims. Original claims 1 to 5 are generic to all of the forms, being directed to the conical, self-separating seal with one annular channel formed therein, the seats affording seals at both sides of this annular channel. Original claims 6 to 10, $\overset{16}{\wedge}$ and 19, were subgeneric to Figs. 1 to 4 and 6. These claims bring in two independent passages leading through and discharging at the forward end of the tip, but are broad enough to cover the form of Figs. 1 and 2 where the second longitudinal passage is a cooling passage, or the form of Fig. 6 where it is a passage for cutting oxygen. Claims 12 to 15, 18 and 20 were specific to Figs. 1 and 2, because they specified a passage for colling fluid. Claims 11, 17, 21 and 22 were specific to Fig. 6 because they specified a cutting oxygen passage. Claim 6 has been canceled in view of the Examiner's objection. Claims 11, 17, 21 and 22 have been canceled without prejudice to applicant's right to present them in a divisional application.

It is submitted that all of the present claims clearly belong in this application, or at least that it is entirely permissible to present them in one case.

This applicant was aware of the Bruckner and Williams patents prior to the filing of the application. Bruckner shows just what applicant has discovered may be avoided, namely a sticking or clamping [fol. 317] seal. Applicant employs conical seats, characterized by abrupt non-ticking angles. The Bruckner patent shows a mere gentle taper. There is all the difference in the world between the behavior

of conical parts, such as applicant employs, and a gentle taper, such as disclosed by Bruckner. They have nothing in common, and display characteristics which are the exact reverse of each other. With a taper such as Bruckner's, the harder the tip is forced into the head, the more it is clamped by the squeezing action of the head and the more difficult it is to remove it. The seating is effected by means of screw-threads, with which there is always danger of applying more power than is necessary. In practice, the Bruckner torch would be practically inoperative and useless, since the time would come when the tip would be so wedged into the socketed head that it would be impossible to remove it without damage to the parts. The utility of these torches demands that the tips shall be readily, practically instantaneously, removable and replaceable. A series of tips of different sizes goes with each torch, and it is as important to the operator that these tips be readily interchangeable as it is to a dentist that he be able to change his drills in his dental engine. It is a fact that tapered tips seating in tapered sockets were tried in oxyacetylene torches some years back, and abandoned because they could not be used on account of this very wedging of the tips into the head. It is therefore urged that the Bruckner reference should be withdrawn as having no bearing on this case.

This applicant has made the discovery that above a certain critical angle, characteristics are entirely altered. This critical angle is the dividing line between diametrically unlike things. A tip with an [fol. 318] abrupt conical seat fitting into a similar conical socket absolutely cannot become wedged or stuck. On the contrary, the greater the pressure forcing the tip into the head, the more does the reaction of the head tend to force the tip out; so that, as soon as the coupling is loosened, the tip must infallibly fall out of the socket. But when the tip and head are coupled together, these conical seats from perfect seals, and applicant employs the one pair of complementary internal and external conical seats *to perform all the sealing between the head and the tip.* To this end, he forms *between the conical sealing surfaces* an annular channel to place the acetylene inlets in communication with the acetylene conduit in the head, there being ample sections of the conical seats at *both sides* of this annular channel to form *two seals.* One seal is the internal seal, between the oxygen and the acetylene; the other is the external seal between the acetylene and the atmosphere.

Williams fails to show such conical seats provided *therein* with an annular channel and affording ample conical seals at both sides of such channel. Instead, Williams resorts to packing 23 to form his external seal. It may be noted that cylindrical meeting surfaces, such as shown in rear of this packing, are entirely ineffectual as a seal; so that Williams is compelled to use the packing. Now packing in any form has proved distinctly objectionable in these torches. The conditions of use of these implements, it must be remembered, are extremely unusual. In view of these considerations, it is urged that the Williams patent be withdrawn as a reference.

[fol. 319] Applicant's achievement, is the production of an oxy-acetylene torch having conical, non-sticking, self-separating, external and internal seats, provided with an annular channel establishing communication for one kind of gas, and affording perfect conical seals at both sides of this annular channel, that is, one seal between the two kinds of gases, and one seal between the gases and the atmosphere. In a development of the invention, he employs more than one annular channel in the conical seats, and has a corresponding number of alternating seals.

Line 12 of claim 5 is found to be correct. The lateral inlet passages, are the acetylene inlets in the rear part of the tip. The annular passage or channel in the seats places these inlets in communication with the side conduit in the head. This side conduit in the head supplies the acetylene.

Claim 7 is believed to be correct. The independent longitudinal passage is either the cooling passage or the cutting oxygen passage in the tip. The annular passage or channel 35 places this independent longitudinal passage in communication with its conduit in the head.

Allowance is respectfully solicited.

Very respectfully J. F. Brandenburg, Attorney for applicant.

2 Rector Street, New York, May 12, 1911.

[fol. 320] Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C."

Paper No. 4

All communications respecting this application should give the serial number date of filing, and title of invention.

A. M. F.

Department of the Interior,
United States Patent Office.
Washington, May 19, 1911.

John W. Whitford, c/o J. F. Brandenburg, 2 Rector Street, New York, N. Y.:

Please find below communication from the examiner in charge of your application Serial No. 612,189, Welding or Cutting Apparatus, filed March 4, 1911.

E. B. Moore, Commissioner of Patents.

In response to amendment filed May 15, 1911.

Reference character 29^a should be added to the drawing.

Page 7, line 15 as amended, "29^a" should be —29—.

Claims 1 to 4 recite apparatus for cutting metals.

Applicant discloses apparatus for cutting metals in Fig. 6 but not in other figures of the drawing. Claims 7, 8, 9, 14 and 16

recite a tip having an independent passage, which is shown in Fig. 6, but not in other figures of the drawing.

Claims 10, 11, 12, 13, 15 and 17 recite "a passage for cooling fluid," shown in Figs. 1 to 4, but not in other figures of the drawing.

Applicant's remarks as to the requirement for division is noted. However, the form of apparatus shown in Fig. 6 is adapted to cutting metal while that shown in Figs. 1 to 5 is not adapted to cutting metal.

The requirement for an election of species is repeated.

Claims 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17 are rejected as being for separate inventions.

Claim 5 stands rejected on patent to Williams, 981,342, of record. Applicant's remarks to the effect that Williams shows packing while applicant does not show packing are noted, but are considered insufficient to show how this claim avoids the reference.

Claim 6 is rejection as being for a device not disclosed as applicant fails to disclose a tip having two sets of inlets to the mixing passage.

M. R. Sullivan. C. J. S.

[fol. 321] May 23, 1911,
Division XXX.

In the United States Patent Office

Div. 30, Room 152

In the Matter of the Application of John W. Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 4, 1911. Serial No. 612,189.

Hon. Commissioner of Patents, Washington D. C.

Sir: Replying to Office action of May 19, 1911, the above-entitled case is hereby amended as follows:

Will the Examiner kindly change the reference character 29 in Figure 6, to 29^a?

Page 7, line 15, change "29^a" to: 29.

Claims 1 to 4, line 1 of each, after "In" insert: *blow-pipes;* lines 1 and 2 of the same claims, strike out "for heating, welding or cutting metals by means of gases under pressure."

Remarks

It was not the intention to limit claims 1 to 4 to cutting apparatus. The structure recited in this claim may be embodied in a welding apparatus such as shown in Figure 2 or a cutting apparatus such as shown in Figure 6. The intention was to claim this structure in heating, welding or cutting apparatus. However, in order to avoid any misconception, the claims have amended. The independent longitudinal passage of claims 10, 11, 12, 13, 15 and 17 is a generic term covering either the cutting-oxygen passage 36 of Figure 6, or the passage 39 annular in cross-section for cooling air. This

[fol. 322] is made clear by the last paragraph of page 6 and the first two paragraphs of page 7.

It is submitted that the requirement for division has been fully satisfied. Only one species is claimed. The remaining claims are either generic or sub-generic.

The apparatus of Figures 1 to 5 is adapted for heating or welding of metals. Figure 6 shows the apparatus with an added feature, the passage for cutting oxygen, so that this apparatus has an added use—that of cutting. Welding can be performed with the apparatus of Figure 6. All that is necessary is not to turn on the cutting-oxygen.

As to the reference Williams, applicant does not urge that it fails to anticipate *merely* because it uses packing. The important fact is that Williams' construction is distinctly different from applicant's, so that he is obliged to use packing. Applicant employs conical seats with an annular communication-establishing groove in these seats and between their ends, so that there are conical sections of the seats in front and also in rear of this channel, these conical sections forming sure external and internal seats. The internal seat seals the gases from each other. The external seat seals against the atmosphere. A torch is not successful without efficient seals at both points. Williams does not disclose this structure. Therefore he fails to anticipate. Because he did not make applicant's discovery, he was forced to make use of unsatisfactory packing.

Favorable action is solicited.

Very respectfully, J. F. Brandenburg, Attorney for Applicant, 2 Rector Street, New York, May 22, 1911.

[fol. 323] 2—260

Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C." A. M. F.

Paper No. 6

All communications respecting this application should give the serial number, date of filing, and title of invention.

Department of the Interior,
United States Patent Office,
Washington, May 27, 1911.

John W. Whitford, c/o J. F. Brandenburg, New York, N. Y.:

Please find below a communication from the Examiner in charge of your application Serial No. 612,189, Welding or Cutting Apparatus, Filed March 4, 1911.

E. B. Moore, Commissioner of Patents.

In response to amendment filed May 23, 1911.

Page 5, last three lines, "two sets of inlets" fails to agree with the drawing.

Claims 1 and 3 are rejected as applicant fails to disclose a burner tip having two sets of inlet passages to said longitudinal passage. His burner tip has one set of inlet passages and in addition one other passage, which passages can not be claimed as two sets of inlet passages.

Claim 2 is objectionable in reciting two sets of passages, one set leading from said annular recess, and the remaining inlet or inlets. If there are two sets of inlets then the remainder is a set of inlets and not an "inlet or inlets," since one inlet can not be termed a "set of inlets."

Claims 1 to 5 are rejected on either patent to Bruckner, 935,458, or Williams, 981,342, both of record.

Applicant attempts to avoid these references by specifying abrupt angled seats. The words "abrupt angles seats" have no definite meaning. Therefore these claims, 1 to 5, are objectionable as indefinite. Moreover, if applicant should specify a definite angle as measured on the drawing, this difference would be judged to be a [fol. 324] difference in degree only, such as any mechanic would make when confronted with the difficulties set forth, and not involving invention.

Claim 6 stands rejected as being for a device not disclosed.

Claim 6 is also rejected on patent to Williams, 981,342 of record. To form Williams' pipe 33 integral with the head of his blowpipe is judged not to involve invention.

Claims 7, 8, 9, 14 and 16 recite a tip having an independent passage. These claims are judged to be specific to Fig. 6 as the cooling passage shown in Fig. 2 is formed between the tip and sleeve 40.

Claims 10, 11, 12, 13, 15 and 17 are specific to Fig. 2. Applicant states that these claims cover either the cutting oxygen passage 36 of Fig. 6, or the passage 39 annular in cross-section, for cooling air. Claims 11, 12 and 13 recite the passage as "annular in cross section," which can not be read on Fig. 6, and the function "for leading cooling fluid," recited in claims 10, 15 and 17, is judged not to apply to Fig. 6.

Claims 7 to 17 stand rejected as being for separate inventions.

M. R. Sullivan. C. J. S.

[fol 325] Mail Room,
June 8, 1911,
U. S. Patent Office.

June 9, 1911,
Division XXX.

In the United States Patent Office

Div. 30, Room 152

In the Matter of the Application of John W. Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 4, 1911. Serial No. 612,189

Hon. Commissioner of Patents, Washington, D. C.

Sir: Replying to Office action of May 27, 1911, the above-entitled case is hereby amended as follows:

Page 5, next to the last line, change "sets" to *kinds*.

Page 7, line 18, change the period to a semicolon, and add: *the sleeve constituting part of the tip.*

In place of claims 1 to 5, substitute the following claim:

> 1. A device of the character described comprising a head provided with a conical socket and separate conduits for combustible and combustion-supporting gases, a burner tip provided with a mixing and discharge passage, separate inlets for the two kinds of gases to said passage and a conical rear portion, the surfaces of said conical tip portion and conical socket being formed as similar-abrupt-angled freely-E′. separable conical seats, ^ said seats having an annular E′
>
> channel formed between them intermediate their length for placing one kind of said inlets in communication with the corresponding conduit in the head, the portions of the seats at opposite sides of said channel affording inner and outer gas-tight seals of ample width, and means for forcing the tip and head together, said tip being held in place by said means alone.

Cl. 2.

[fol. 326] Claim 6, line 3, strike out "two sets of" and insert: *separate;* line 7, change "sets" to: *kinds;* line 13, change "a set" to: *one kind.*

Renumber claims 6 to 17, as 2 to 13.

Remarks

For the sake of conciseness claims 1 to 5 have been rewritten and condensed so as to present the substance thereof in one claim. This claim sets forth matter which is clearly patentable over the references. One of the great problems in these oxy-acetylene welding and cutting torches is the production of sure seals, both between the two kinds of gases before they enter the mixing tip and between the gases and the outside atmosphere. Leakage between the gases before entering the tip absolutely prevents the operation of the torch. It is essential in these torches that the two gases in the flame always have an exact proportional relation. If there be an excess of oxygen in the flame, the metal will be oxidized, so that the weld will be worthless. An excess of acetylene means carbonization and crystallization of the metal, in which case, also, the weld is unsuccessful. Exact proportions cannot be maintained if there is leakage. Moreover, with leakage the flame cannot be maintained, but will flash back into the tip, burning at the junction of the two kinds of inlets with the mixing passage. The explosion wave of the oxy-acetylene mixture has such great velocity that it is absolutely necessary to maintain a certain velocity in the stream passing through the tip, which cannot be done if there is leakage, either between the gases or between the gases and the air. It is also a primary requisite of

these apparatuses that each torch have a set of from five to ten [fol. 327] tips, which must be instantly interchangeable. Apparatus in which the tips, in actual working, will stick in the head and refuse to become dislodged, is an utter failure. Taper joints such as shown in the Bruckner patent have been tried and discarded as worse than useless. They taught the art nothing. This applicant is the first to produce a socketed head and tip provided with conical meeting surfaces of such character as to be self-separating when the means for forcing them together is released, these conical meeting surfaces affording both inner and outer gas-tight seals, between the two kinds of gases before entering the tip and between the gases and the outside atmosphere. This is done by forming an annular communication-establishing channel for one kind of inlet between the conical meeting surfaces, for example in the conical portion of the tip, so that there are conical sealing seats at both sides of this annular channel.

In other words, applicant has produced a torch head and tip having conical seating surfaces which compel the head and tip to separate upon the release of the external pressure and which afford sure inner and outer seals without the use of any kind of packing whatsoever. This is absolutely new over any one of the references and is not suggested by the references together. This is one of those meritorious and exceedingly practical inventions which are specially deserving of the protection which it was the design of the Patent Act to extend to inventors.

The Examiner is requested to withdraw his objection as to two species being set forth in the claims. Those claims reciting an independent passage are generic to the tip having an annular cooling passage and to the tip having a bore for cutting oxygen. The Examiner's statement that the cooling passage of Figure 2 is formed between the tip and the sleeve 40 is not well founded. The sleeve [fol. 328] is part of the tip so that the annular passage is in the tip. It is not necessary that a part be formed of a single piece. The only reason that the tip with the annular cooling passage is not formed in one piece is because it is cheaper to form a separate sleeve to be secured on the body part of the tip.

The rejection of claim 6 on the patent to Williams is not understood. If we formed the pipe 33 of Williams' integral with the head, which is in no way suggested by the patent, we would not have what is set forth in this claim. This claim calls for a third conduit in the head, and an independent passage in the tip adapted to communicate with this conduit in the head when the tip is inserted in place. Moreover, the claim calls for separate annular passages in the conical seats, one annular passage establishing communication with the inlets for one kind of gas for combustion and the other annular passage communicating with the independent passage in the tip. As a result we have a torch in which the tip is placed in communication with the third conduit in the head either for cutting oxygen or for cooling air by the simple act of inserting the tip in place in the socket. Williams' pipe 33 is entirely separate from the head and must be attached to and detached from the tip

at each interchange, this being in addition to the operation of inserting and removing the tip. The art as far as providing a passage for cutting oxygen in the tip had reached the stage shown in the Williams patent long before the date of the Williams patent and it had never gotten any further. This applicant has produced a very substantial and entirely novel improvement in this connection, and it is submitted that the claim should be allowed. A favorable action is solicited.

Very respectfully, J. F. Brandenburg, Attorney for Applicant, 2 Rector Street, New York, June 7, 1911.

[fol. 329] Patent Office,
Jun. 17, 1911,
Mailed.

Div. 30, Room 152

Paper No. 8

Address only "The Commissioner of Patents, Washington, D. C." All communications respecting this application should give the serial number, date of filing, and title of invention.

A. M. F.

Department of the Interior,
United States Patent Office,
Washington, June 17, 1911.

John W. Whitford, c/o J. F. Brandenburg, 2 Rector Street, New York, N. Y.:

Please find below a communication from the Examiner in charge of your application Serial No. 612,189, Welding or Cutting Apparatus, filed Mar. 4, 1911.

E. B. Moore, Commissioner of Patents.

In response to amendment filed June 8, 1911.

Page 7, line 18 as amended is in error. Applicant should not describe the sleeve 40 as forced on an annular shoulder 41 at the base of the nozzle part of the tip and describe the tip as indicated by reference character 28, and also describe the sleeve 40 as part of the tip. The description of what is indicated on the drawing by reference character 28 as a "tip" and the description of what is indicated on the drawing by reference characters 28 and 40 as a "tip" are contradictory. The tip can not be a part of and a complete device.

Claim 1 is clearly met by and is rejected on patent to Bruckner, 935,458, of record. The patent to Williams, 981,342, of record, shows the joint between the tip and head made at a greater angle than that shown by Bruckner; therefore this claim is also rejected on patent to Bruckner, 935,458, in view of Williams, 981,342, both of record.

Claims 3 to 13 stand rejected as being for separate inventions. Applicant's remarks that his sleeve is a part of the tip do not agree with the specification, in which he states that the tip is shown at 28 and the sleeve at 40.

[fol. 330] Claim 2 is specific to Fig. 6, therefore this claim is also rejected as being for an invention separate from that in claims 6, 7, 8, 9, 11 and 13.

Applicant's remarks on the rejection of claim 2 on Williams, 981,342, are noted, but the distinguishing features mentioned are not found in this claim.

M. R. Sullivan, Examiner. C. J. S.

[fol. 331] In the United States Patent Office

Div. 30, Room 152

In the Matter of the Application of John W. Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 4, 1911. Serial No. 612,189

D9

Hon. Commissioner of Patents, Washington, D. C.

SIR: Replying to Office action of June 17, 1911, the above entitled case is hereby amended as follows:

Page 7, line 18, change "nozzle" to: *body;* after "part", insert: 280.

Claim 2, end of line 7 insert a comma; next line strike out "and", and insert:

D¹. *said head being provided also with.*

Add the following claims:

D². [14.]* In a device of the character described, a head having conduits for welding gases and a conduit for a gaseous fluid for cooling, and a removable burner structure having burner structure sealing engagement with the head, said ∧ [tip]* being provided with a longitudinal passage for the welding gases and an encircling longitudinal passage annular in cross-section for the cooling fluid, said passages both being provided at the rear with inlets and means establishing communication between said inlets and conduits irrespective of relative burner structure rotation, and a shield on the forward end of the ∧ [tip]* constructed and arranged to deflect the current of cooling fluid backward.

[*Words and figures enclosed in brackets erased in copy.]

[fol. 332] [15.]* In a device of the character described, a head having conduits for welding gases and a conduit for a gaseous fluid for cooling, and a removable burner structure
burner structure
having sealing engagement with the head, said ∧ [tip]* com-
a shoulder on its rear part and,
Per E. prising a body having ∧ a longitudinal passage therein for welding gases, a sleeve secured on said
" " ∧ [a]* shoulder [at the inner part of the body]* and forming with the body a passage annular in
burner structure
cross-section, the body part of the ∧ [tip]* having inlet passages leading to said annular passage and [there being]* an annular groove communicating on the one hand with said inlets and on the other hand with the conduit for cooling fluid in the head.

Argument

The new reference character will be added to the drawing, and the leader of reference character 28 will be changed so that it is perfectly clear that it designates the tip as a whole. This disposes of the object that claims 3 to 13 are for separate inventions, and it is believed that a favorable action on the merits thereof may be given.

The rejection of claim 2 is not understood. The Examiner says that the distinguishing features mentioned (in the last argument) are not found in the claim. It is believed that all the distinguishing features to which attention was called are present in the claim. The claim has been amended, however, so that possibly the language is clearer than before. The presence of three conduits in the head, one for combustible gas, one for combustion-supporting gas, and one for a third gas, either cutting oxygen or cooling fluid, is set forth. Also the mixing passage in the tip and the inlets therefor communicating with the proper conduits in the head. Also the inde-
[fol. 333] pendent longitudinal passage in the tip,—for cutting oxygen or cooling fluid as the case may be. Also the conical seats, and two annular communication-establishing passages or grooves between these seats, placing the independent longitudinal passage and one kind of inlet in the tip in communication with the proper conduits in the head. In Williams there is no conduit for cutting oxygen in the head; and the passage for this oxygen in the tip is not supplied from the head, but from a pipe which is coupled to the forward part of the compound tip. The applicant is confident that the Examiner will find the substance of the claim entirely different from anything in Williams. Allowance of the claim is accordingly asked. Should the Examiner find any ground of objection, will he be so good as to set it forth specifically

We now come to the first claim, which has been rejected, either

[*Words and figures enclosed in brackets erased in copy.]

on Bruckner alone, or on Bruckner in view of Williams. The first ground of rejection will now be considered.

The Examiner has previously raised the question as to whether the claim defines over Bruckner. It is submitted that it does, clearly. Bruckner shows a very acute angle, the inclination of the sides being very gentle. There can be no question that this seating portion of the tip is correctly described as having a gentle taper. The claim calls for abrupt-angled conical seats. This is something which the seats of Bruckner distinctly are not. There is a real difference, not of language only, between a gentle taper and an abrupt-angled cone. The taper of the Bruckner tip and socket must stick, and the harder they are forced together by the screw coupling and the longer the tip remains in the socket during use, the more immovably will they be jammed, so that it may be [fol. 334] practically impossible to remove the tip after the coupling is unscrewed. The claim specifies that the abrupt-angled conical seats are freely-separable; if anything, the harder they are forced together, the more the reaction of the socket tends to force the tip out, so that it is absolutely impossible to cause the tip to stick, no matter how tightly the coupling is screwed. As soon as the coupling is unscrewed, the tip and socket must fall apart. This is not a mere difference in degree. It is a radical difference in structure. There cannot be a difference in degree only when two devices operate in diametrically opposite ways. "It is not every change of form and proportion which is declared to be no discovery, but that which is *simply* a change of form and proportion, and nothing more. If, by changing the form and proportion, a new effect is produced, there is not simply a change of form and proportion, but a change of principle also." Davis v. Palmer, 2 Brock. 298. "Under our law a patent cannot be granted merely for a change of form. * * * Merely to change the form of a machine is the work of a constructor, not of an inventor; such a change cannot be described an invention. Nor does the plaintiff's patent rest upon such a change. To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles or powers, or as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent. Such is the basis on which the plaintiff's patent rests." Winans v. Denmead, 15 How. 340.

The truth of the matter is that there is a critical angle, all angles less than which will cause sticking, and more sticking the greater the pressure, and all angles greater than which are incapable of sticking, no matter how great the pressure. Experiment seems to show that this critical angle is in the neighborhood of 13°. It has demonstrated that the gentle taper of Bruckner is well under the critical [fol. 335] angle, and that a tip and socket such as illustrated in the patent is useless because of the practical impossibility of separating the head and tip. As the Examiner is probably aware a torch outfit always includes a set of tips, from five in number upward, which are interchangeable in the head. This is absolutely necessary, because different kinds of work demand different sizes of flame, it be-

ing impossible to effect a weld properly except with a flame of appropriate size. On different parts of the same job different tips must often be used. Therefore, a torch is practically inoperative, if its tips are not readily removable and replaceable. The angle shown by way of illustration in the drawing of this application is well above the critical angle. Such a tip and socket cannot stick; therefore, the tips may be changed instantly. These considerations make it obvious that there is not a mere different in degree between the Whitford and Bruckner joints, but a real difference in principle and structure; moreover that it is not a question of a particular angle, that is, of a specific number of degrees, but of an angle having certain characteristics fully set forth in the specification and claim, and an illustration of which is given in the drawing.

It is interesting to consider just what changes "in form and proportion" the courts have held to involve invention. There is the leading case of Winans v. Denmead *supra*, where all the patentee did was to make his car body of the form of a frustrum of a cone. Surely, the Supreme Court would not have held this patent invalid if the prior art had disclosed a car body having a mere gentle taper. The principle would have been lacking in such a structure. The Court would undoubtedly have dismissed such alleged prior anticipation as a superficial or accidental similarity only. It would have been as reasonable to say that the conical car body was anticipated [fol. 336] by the old car bodies with straight sides, because there would be a mere difference of degree between a straight side and an inclined side, geometry teaching us that a straight line may be regarded as a straight angle, an angle of 180°. Clearly all angles are not substantially the same thing, differing in degree only. If a structure with one angle will do something that a structure with another angle will not, or *vice versa*, the difference in the angles makes a difference in principle, and, therefore, a real difference in structure.

Then there is the case of Mabie v. Haskell, 2 Cliff. 507. There the novelty of the invention lay wholly in changes in form, which might seem to be mere differences of degree, but which the court found to produce new results. The following is an extract from the decision:

"On the contrary, it is quite clear that what the inventor claims is the forming the last as described, that is, that the toe of the last shall be elevated higher than what was usual prior to the date of the invention, and that the back of the heel shall be thrown forward, as shown in the drawings, and that the last 'formed in the manner specified,' shall be as short or slightly shorter in the first measurement described in the claim than in the second measurement. Carefully examined, it is clear that it is a patent for the peculiar form of the combination, as understood in the decided cases. * * * Suffice it to say, after an attentive perusal of the testimony, I am of the opinion that the invention in controversy is both new and useful."

"Elevating the toe higher than usual," "throwing the back of the heel forward," "the last being as short or slightly shorter in the first measurement than in the second measurement"; if these changes involved invention, why does not applicant's change with its highly important change in result?

The Examiner's attention is also called to the following quotation:

[fol. 337] "The change described in the specification of Pearl is a change in the form of the spindle and a change in the form of the bobbin. It involves in the case of the bobbin a change of the location of the upper adhesive bearing from the top to about the center of the bobbin. Without a knowledge of the results accomplished by these changes they might at first glance, appear to be merely structural changes. Nothing has a greater tendency to prove that these changes involve some functional difference, beyond mere mechanical perfection and adjustment, than the greatly improved result attending the change when viewed in connection with the failure of the many experiments previously made to accomplish similar results by mere structural changes like those, for example, of diminishing the weight of the spindle in all its parts. It does seem impossible to reconcile the greatly improved results attained by the invention of Pearl with the theory that no functional, but only a mere structural, change was effected." Pearl v. Ocean Mills, 2 B. & A., 469; 11 O. G. 2.

Moving the bearing from the top to about the center of the bobbin might have been a mere difference in degree, providing new and important results had not been obtained. Just so, the difference between Whitford and Bruckner is not one of degree only, because the principle involved and the results obtained are entirely different.

In Brunswick v. Thum, 111 Fed. 904, 50 C. C. A. 61, (a comparatively recent case), the patent covered an upgrade portion inserted in a bowling-alley return-way. The court said in part, as follows:

"The improvement consists in an extremely simple, and, it would seem, perfectly obvious, application of common knowledge as to the law of gravitation. Were there nothing in the record but the bare statement of facts above set forth, we should be inclined to concur with the court below in the proposition that 'had any skilled mechanic been asked to perfect a structure that should gradually arrest the momentum of the returning ball, an ascent would obviously have been the structure needed.' But in this case, as in the Singer case, the evidence shows conclusively, and indeed without contradiction, that this very demand for an arrester of the returning ball was before skilled mechanics for many years, and yet no one before Reisky hit upon the device, which now seems obvious."

It is submitted that Whitford's invention was far less obvious than this.

Similar cases might be quoted in numbers. As was said in Albright v. Langfeld, 131 Fed 473,475, "examples of patented inven-

[fol. 338] tion which have been upheld by the courts, although they differed very little in form, mechanism, or operation from other appliances, are numerous." The case of the one-piece collar button, Krementz v. S. Cottle, 148 U. S. 556, 13 Sup. Ct. 719, 37 L. Ed. 558, is well known. Also the famous case, Edison Electric Light Co. v. U. S. Electric Lighting Co., 52 Fed. 300, where it was held invention to make the carbon filament of an electric light 1/64th of an inch or less in diameter, instead of 1/32nd of an inch or more. Also, Davis v. Parkman, Parkman v. Davis, 71 Fed. 961, where it was held invention to give the footboard of a rowboat an upward curvature of about 45°.

In the light of all these decisions, it is submitted that there can be no other conclusion but that the important results obtained by the Whitford structure over the Bruckner device mark the difference as not one of degree merely, but one involving different principles, functions, and operation, and, therefore, amounting to invention.

Not only is the Bruckner patent not an anticipation because the difference is more than a difference of degree, but also because the Bruckner device is practically inoperative as to its taper joint. No one would use a torch, the tips of which would become stuck so that they could not be removed and replaced, or at least without great labor and loss of time. Such a torch would not fulfill one of the primary requirements for such apparatus. It would be unsalable. Applicant's abrupt-angled conical joint is designed to afford absolutely tight seals, on the one hand between the oxygen and acetylene before entering the tip, and on the other hand between these gases and the outside atmosphere, and at the same time to be *freely separable* when the coupling is loosened. The Bruckner joint is incapable of operating in this manner. "However close the [fol. 339] resemblance between some prior alleged invention, even when put in actual use, and the patented invention, if such alleged prior invention was not operative, and failed to produce the beneficial results sought and produced by the patent, it would not constitute prior invention. In such case the patented invention cannot be regarded as old." General Electric Co. v. Wise, 119 Fed. 922,926. "A device which does not operate on the same principle cannot be an anticipation." Los Alamitos Sugar Co. v. Carrol, 173 Fed. 280,284. "A patent for an operative and useful device is not anticipated by a prior device which is not operative, although the parts and combination may be similar." Syl. Hale & Kilburn Mfg. Co. v. Oneonta, Cooperstown & Richfield Springs Ry. Co., 129 Fed. 598. "When a patented process or machine proves a failure, is inoperative, and another follows, and is a success in its operation, the latter is a new invention and patentable, even though we have the same machinery or parts of machinery, but they are combined or put together in a new way; and this is true even if the latter combination closely follows and resembles the first, provided there be a difference. In such cases, it is evident that the later patentee has succeeded where the other failed; that he has discovered or invented the desired thing to accomplish a new and a useful result; that his change, however unimportant it may seem to the observer, is the key to the whole

situation. In such case the defense of anticipation, of prior use, or prior invention is not made out." Kirchberger v. American Acetylene Burner Co., 124 Fed. 764, 777.

The following decision is particularly interesting, because the court took the ground that structures that became wedged and jammed in action were failures. Hale & Kilburn Mfg. Co. v. Oneonta, Cooperstown & Richfield Springs Ry. Co., 129 Fed. 598.

[fol. 340] "The desideratum is to obtain a uniform movement of the back and seat so as to lock the same rigidly after the back is turned. *This is absolutely essential to the successful operativeness of the seat. Failure in this respect is apt to jam or wedge the seat; displacing the alinement and the adjusting mechanism, resulting in temporary annoyance, as well as some inconvenience to the manipulator.*" Extract from page 599 (underlining our own).

"The conclusion reached upon this point is that the defendant has failed to establish the practicability of the structure claimed to anticipate the patent in suit, and, as the idea of a more perfect car seat has been successfully embodied in the patent by Hale, he must be acknowledged the real inventor. As the prior invention upon which defendant relies was not capable of practical operation, the combination of old elements found in the Hale patent correlated for adaptation to a new and useful purpose, is entitled to the protection of the patent laws." Extract from page 601.

It is submitted that, with the substitution of a few terms, this decision might have been written for the present case. The conclusion must be that the Bruckner patent is not a valid reference, either used singly or in combination with Williams. The taper joint of Bruckner is not "successfully operative;" it is an absolute failure, and a failure is a cipher as far as anticipating or showing lack of invention in a later, successful device is concerned. The Williams patent does not anticipate the claim; certainly it cannot be fortified by the addition of a patent of no effect as far as the features in question are concerned. This is as clear as that one and nothing can be nothing more than one. It is apparent, therefore, that the rejection on Bruckner and Williams is insufficient. However, a word or two as to this Williams patent.

The claim calls for a head and tip having, respectively, internal and external, abrupt-angled, freely-separable conical seats, *said seats having an annular channel formed between them intermediate their length for placing one kind of inlet in communication with the corresponding conduit in the head, the portions of the seats at opposite sides of said channel affording inner and outer gas-tight seals of ample width.* In other words applicant's joint is designed to be [fol. 341] non-sticking and freely-separable, and to afford both inner and outer gas-tight seals in the form of frustums of a cone, that is, a seal between the oxygen and acetylene before entering the tip, and another frusto-conical seal between the gases and the atmosphere. With this joint, the applicant attains what has long been desired, perfect seals, both inner and outer, without the use of packing, together with perfectly free separation of the seats when the coupling

is released. All of this is essential to a completely successful joint between the head and removable and replaceable tip of an oxy-acetylene torch. This is not an aggregation of features, there is nothing divisible from the rest, it is a unitary structure, and it marks a really great advance in the art. The Examiner must remember that this is no ordinary art. The gases employed, the explosiveness of the mixture that may be formed, the excessively high temperature produced by the aid of this small apparatus, the absolute necessity for maintaining an exact mixture within exceedingly narrow limits, under the penalty of spoiling the weld, the imperative necessity of guarding against even the smallest leaks, all mark this as an art in which exactitude must be primary. As against a completely successful, thoroughly worked-out apparatus, partial resemblances and incomplete approaches have no significance. It must be all or nothing. We cannot drop one or more of the features of the Whitford joint, without destroying its usefulness and dissolving its identity. No more can we say that something in the prior art showing part of its features can in any way cast a doubt on its novelty. As to all those features underlined at the outset of this paragraph, the Williams patent is lacking. It has no annular communication-establishing channel *formed between conical sealing seats.* It does not have frusto-conical seals at both sides of this [fol. 342] channel, affording both inner and outer gas-tight seals, without packing. In consequence Williams is forced to resort to packing, as shown at 23. Now packing has been tried in these torches and has been found wanting. A completely successful torch cannot have packing at the joint between the removable and replaceable tip and the head. As far as affecting the patentability of claim one is concerned, the Williams patent, also, is a cipher and a failure. By not having all of the features of applicant's joint, it falls absolutely short of "successful operativeness."

"It cannot be said that a patent for a device which fails to accomplish the desired end is an anticipation of one which successfully accomplishes it." Farmers' Mfg. Co. v. Spruks Mfg. Co., 127 Fed. 691, 693.

Nor can two failures added together make a success. Both Williams and Bruckner fall far short of the completeness of applicant's invention. Now that he has shown the combination wherein lies complete success, it is easy to pick features some from one reference and some from the other and to say that such difference as remain are merely those of degree. Even granting that these patentees approached somewhere near to Whitford's invention, they did not discover it, nor did they publish anything to the world that would make it obvious "It may have been under their very eyes, they may almost be said to have stumbled over it, but they certainly failed to see it, to estimate its value, and to bring it into notice." Loom Co. v. Higgins, 105 U. S. 580, 591, 26 L. Ed. 1177. "It was apparently a very simple change, but it converted 'imperfection into completeness.'" Hess-Bright Co. v. Standard Roller-Bearing Co.,

177 Fed., 435, 437. "Under such circumstances courts have not been reluctant to sustain a patent to a man who has taken the final step which has turned a failure into a success. In the law of patents it is the last step that wins." Mr. Justice Brown, in re [fol. 343] Barbed-Wire Patent, 143 U. S. 275, 282, 12 Sup. Ct., 443, 450, 36 L. Ed. 154.

In order the more fully to appreciate the importance of the invention it may be well to take a little excursion back into the beginning of the art. It will be well to realize that there has been nothing obvious about this art from the start of things. It was a case of dealing with a practically new combustible mixture, having many peculiar properties. The apparatus employed in carrying out oxyacetylene welding and cutting may seem simple, but it has required the expenditure of many thousands of dollars and much time to produce torches on whose operation reliance could be placed. In the early days of the art an author writing in La Genie Civil, volume 43, page 340, made the following observations as to the difficulties encountered:

"At the outset it may seem astonishing that since the appearance of acetylene one has waited until the present to recognize the advantages resulting from the combination of this gas with pure oxygen. Such an omission is as little flattering to the numerous savants who have from the outset studied of the purposes of acetylene, as to the practical men who have worked out its applications.

In reality it is solely the difficulties of realizations which have delayed the progress of this method. * * *

Unluckily the attempts at combustion of acetylene with oxygen in employing the usual blow-pipes, has resulted only in an incomplete success; in that in the apparatuses for exteriorly mixing there formed immediately at the end of the apparatus, an abundant deposit of graphitic carbon, in some seconds the flame being suppressed and replaced by an incandescent mushroom; as for the apparatus with interior mixing, the great explosibility of the mixture of oxygen and acetylene rendering impossible their employment without risking serious accidents because of the relatively great explosive volume which generally exists in these apparatuses."

It was the patent to Camille Rodrigues-Ely and Emile Gauthier, Number 880,099, of February 25th, 1908, that solved the problem as to "interior mixing." This patent introduced the removable [fol. 344] and replaceable tip, having all the passages and ports for effecting proper mixing inside this tip and not in the head or body of the apparatus, a seal being interposed between the conduits in the head so that all possibility of mixing before entering the tip was avoided. In this way, there could exist only a small quantity of mixture in the apparatus, and this in the removable tip. Of this same type is the apparatus of the present invention, which is directed to the production of a perfect joint between the head and tip. This production of a thoroughly satisfactory joint between the head and tips of oxyacetylene torches has been the object of

much experiment and endeavor. It is believed that a practically perfect joint has now been attained, and its importance cannot be overestimated. It is not too much to say that it is the greatest advance in the art of oxyacetylene welding since the Rodrigues-Ely patent first made interior-mixing torches a fact and not a theory.

In view of these considerations, it is believed that the Examiner will have no difficulty in allowing the first claim. His favorable action on the remaining claims is likewise solicited.

Very respectfully, J. F. Brandenburg, Attorney for Applicant,
2 Rector Street, New York, August 4, 1911.

[fol. 345] Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C."

Paper No. 10

All communications respecting this application should give the serial number, date of filing, and title of invention.

E. M. S.

Department of the Interior,
United States Patent Office,
Washington, September 9, 1911.

John W. Whitford, % J. F. Brandenburg, 2 Rector St., New York, N. Y.:

Please find below a communication from the Examiner in charge of your application Serial No. 612,189, filed March 4, 1911, Welding or Cutting Apparatus.

E. B. Moore, Commissioner of Patents.

In response to communication filed August 11, 1911.

Reference character 280 inserted by amendment to page 7, line 18, does not appear on the drawing. Applicant's statement of intention to add the new reference character and to change the leader of reference character 28, is noted.

The rejection of claim 1 on patent to Bruckner #935,458 of record, is repeated. The description "abrupt angled conical seats" does not distinguish patentably from the reference. While it is true that the patentee's seats are of a slighter angle than applicant's, and therefore have a greater tendency to stick, abrupt angled conical joints are of common knowledge, and the substitution of abrupt angled seats involve merely the substitution of one well known seat for another. Moreover, applicant is not the first to apply an abrupt angled seat to this particular art. Such a seat is shown in patent to Williams #981,342, of record. In the decisions referred to by applicant to sustain his views of patentability, the slight changes referred to were made by the patentee, and were not merely selected devices common in various arts.

Claims 2 and 3 appear allowable.

Claim 4 is rejected, as the recitation "through the sealing seats" is inaccurate.

[fol. 346] Claims 4 and 5 are rejected on patent to Williams #981,342 of record, as they fail to recite any structure not disclosed in this patent.

Claims 6 and 7 are rejected as applicant fails to disclose "means for leading the cooling fluid through said seats."

Claim 8 is rejected as applicant fails to disclose "inlets from said sealing seat" or "a conduit opening therethrough". The conduit opens into the annular passage.

Claim 9 is rejected as applicant fails to disclose "inlets from said sealing seat". The parts forming the "annular passage" should be recited.

Claims 10 and 11 are rejected on patent to Williams #981,342 of record.

Claim 12 is rejected on patent to Delcampe, #894,195, July 28, 1908—158-13.5 (x5).

Claims 13 and 14 appear allowable.

Claim 15 is objectionable in reciting a "shoulder" inferentially. The parts forming the annular groove should be recited. Claim 15 appears to contain allowable subject matter.

M. R. Sullivan. C. J. S.

[fol. 347] Oct. 27, 1911,
Division XXX.

Paper No. —

In the United States Patent Office

Div. 30, Room 152

In the Matter of the Application of John W. Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 4, 1911. Serial No. 612,189

Hon. Commissioner of Patents, Washington, D. C.

SIR: Replying to Office action of September 9, 1911, the above-entitled case is hereby amended as follows:

Claim 1, line 8, before the comma, insert:

E^1. of a conicity greater than the critical angle of sticking.

Add the following claim:

E^2. 2. A device of the character described comprising a head provided with a conical socket and separate conduits for combustible and combustion-supporting gases, a burner tip provided with a conical rear portion, a mixing and discharge

passage, and separate inlets for the two kinds of gases to said passage, the inlet for one of the gases opening through said conical portion, the surfaces of said conical tip portion and conical socket being formed as similar abrupt-angled freely-separable conical seats of a conicity greater than the critical angle of sticking, these seats having portions at opposite sides of the inlet through the conical portion of the tip affording inner and outer gas-tight seals of ample width, and means for forcing the tip and head together, said tip being held in place by said means alone.

Renumber claims 2 and 3 as 3 and 4.
Cancel claims 4 and 5, which are hereby rewritten as follows:

E³. [fol. 348] 5. A device of the character described, comprising a head and a removable and replaceable tip carried and supplied thereby, said head and the rear part of the tip having co-operating sealing surfaces formed thereon, said tip being provided with a mixing passage, a discharge orifice therefor at the forward part of the tip and inlets to the mixing passage for the two kinds of gases to be mixed leading from said rear part of the tip, said tip having also therein a longitudinal passage which is independent of said mixing passage and has its inlet at said rear part of the tip and its outlet at the forward part of the tip, and said head being provided with three separate conduits which communicate, respectively, with the two kinds of inlets to the mixing passage and the inlet to said independent passage, said sealing surfaces forming seals between the gases from the three conduits where the conduits communicate with the said inlets and also between the gases and the atmosphere.

6. A device of the character described, comprising a head and a removable and replaceable tip carried and supplied thereby, said head and the rear part of the tip having co-operating sealing surfaces formed thereon, said tip being provided with a mixing passage, a discharge orifice therefor at the forward part of the tip and inlets to the mixing passage for the two kinds of gases to be mixed leading from said rear part of the tip, said tip having also therein a longitudinal passage which is independent of said mixing passage and has its inlet at said rear part of the tip and its outlet at the forward part of the tip, and said head being provided with three separate conduits which communicate, respectively, with the two kinds of inlets to the mixing passage and the inlet to said independent passage, said sealing surfaces having spaced annular communication-establishing grooves formed therein, and portions of the said surfaces at opposite sides of the [fol. 349] grooves constituting seals between the different kinds of gases and between the gasses and the atmosphere.

√Cancel claims 6 to 9, which are rewritten as follows:

E⁴. A device of the character described, comprising a head and a removable and replaceable tip supported and supplied thereby, said tip having a mixing passage discharging at its forward part and inlets thereto at its rear part for the two kinds of gases to be mixed, said tip having also an independent longitudinal passage for a ∧ [gas for cooling],* said head having conduits communicating with said inlets and a third conduit communicating with said passage for cooling ∧ [gas]* and the head and tip being further provided with coöperating sealing seats, sealing the three kinds of [gases]* ∧ from each other and from the atmosphere where the conduits in the head communicate with the said inlets and passage.

[7.*] A device of the character described, comprising a head and a removable and replaceable tip supported and supplied thereby, said tip having a mixing passage discharging at its forward part and inlets thereto at its read part for the two kinds of gases to be mixed, said tip having also an independent longitudinal passage for a ∧ [gas for cooling],* said passage being annular in cross-section and encircling said mixing passage, said head having conduits communicating with said inlets and a third conduit communicating with said passage for cooling ∧ [gas]*, and the head and tip being further provided with coöperating sealing seats, sealing the three kinds of ∧ [gases]* from each other and from the atmosphere where the conduits in the head communicate with the said inlets and passage.

(See fol. 1389.)

√Cancel claim 10, which is rewritten as follows:

E⁵. [fol. 350] 9. A device of the character described, comprising a head and a removable and replaceable tip having a mixing passage with an outlet at the forward part of the tip and inlets at the rear part of the tip for the two kinds of gases to be mixed, said tip having also a longitudinal passage independent of the mixing passage having an inlet at the rear part of the tip and discharging at the forward part thereof, the head being provided with three conduits for supplying the inlets to the mixing passage and said independent passage.

[Matter enclosed between rules erased in copy.]
[*Words and figures enclosed in brackets erased in copy.]

Renumber claim 11 as 10, and line 4, after the comma, insert: *and.*

Renumber claim 12 as 11. Lines 4 and 5, cancel "passages supplied by said conduits" and insert:

E⁸. *a mixing passage with inlets and an independent passage with an inlet supplied by said three conduits.*

Renumber claims 13 and 14 as 12 and 13.

Renumber claim 15 as 14. Line 5 thereof, after "having" insert: *a shoulder on its rear part and;* line 6, strike out "a" and insert: *said;* lines 6 and 7, strike out "at the inner part of the body"; line 9, strike out "there being."

Remarks

The Examiner's reasons for rejecting claim 1 on Bruckner and Williams of record are noted, but it is still believed that the rejection is erroneous. The Examiner attempts to differentiate this case from those referred to in the last argument, by saying that the slight changes in those cases were made by the patentees and were not merely selected devices common in various arts. This contention will not withstand scrutiny. In the leading case of Winans v. Denmead, [fol. 351] 15 How. 340, the sole novelty was the making of a car body in the form of a truncated cone, which the Court held to be broad enough to include, also, a pyramidal form. Is it conceivable that before the date of this invention conical or pyramidal receptacles were not known. This is the common form of hoppers, for example, and hoppers are not a recent invention. The patentee's claim to invention rested not merely on having selected a form, which could not be novel *per se*, but in the successful application of this form to a particular art, where it conferred very special advantages. In Farmers' Mfg. Co. v. Spruks Mfg. Co., 127 Fed. 691, invention related to a veneer barrel, of true barrel shape, that is with a continuous curve from top to bottom. The Court sustained this patent largely because the veneer barrel references relied on did not have the true barrel shape which is essential to strength. Not only was the true barrel shape not new with this patentee but his claim to novelty resided in adhering to the shape which age-long experience had demonstrated to be necessary. In Brunswick v. Thum, 111 Fed. 904, the patent covered an upgrade portion inserted in a bowling-alley return-way, for arresting the returning ball. Certainly upgrades were known before this patentee. Of course persons had observed that a ball rolling downhill has its velocity diminished on an opposite upward slope. Everyone knows that upgrades in railways retard locomotives or electric cars; and upgrades are common in scenic-railways. All of this was old before the patent in suit. But the Court held that it required invention to apply an upgrade in this particular art.

The Court in Winans v. Denmead did not hold that the Winans patent disclosed no invention over ordinary car bodies in view of the fact that a truncated conical shape was known in various arts; and it

[fol. 352] is submitted that the Court would not have pursued this line of reasoning even had the prior art disclosed a car body having a mere gentle slope or taper. Such a prior car body would have formed no better basis from which to argue lack of invention, than the ordinary vertical-walled car bodies because a mere slight taper would be no more suggestive of the principles involved in the Winans patent than a vertical-walled body. It is submitted, therefore, that Bruckner in view of what the Examiner alleges as common knowledge could not constitute a valid ground for rejecting claim 1 of this application.

But the novelty of this invention is not merely the employment of abrupt-angled conical seats of a conicity greater than the critical angle of sticking. His invention *does* reside in the employment of such seats in combination with lateral inlets opening through the seats intermediate their ends, so that the portions of these abrupt-angled seats at opposite sides of the inlets constitute inner and outer seals, preventing both mixing of the gases with each other and leakage of the gases into the atmosphere. This structure is an entity, because these features together constitute the solution of the problem of obtaining a completely satisfactory and operative joint between the head and the removable and replaceable tip of oxy-acetylene welding or cutting apparatus. Bruckner has no bearing on this claim because it not only does not have seats of a conicity greater than the critical angle of sticking, but seats of a diametrically-opposite character, having an angle less than the critical angle of sticking. It is not a question of the seats sticking more or less. It is the physical impossibility for applicant's seats to stick, and Bruckner's seats must necessarily stick, and stick the harder the more they are forced together. The Bruckner joint is unquestionably inoperative. Joints of this character have been tested, and simply could not be used for [fol. 353] these torches, however suitable they may be for other purposes. The Examiner must keep in mind that the conditions of this art are peculiar. Now it is well settled that an inoperative device cannot stand in the way of a later successful invention. The Examiner is asked to read again the decisions on this head quoted in the last argument. In view of them it is manifestly improper to cite Bruckner against claim 1.

Williams fails completely as a reference because his seats do not form internal and external seals at opposite sides of the lateral inlets. Moreover, as pointed out in the last argument this patent is little better than inoperative, because by reason of its sealing surfaces being at one side only of the lateral inlets the patentee must rely on packing to seal against the atmosphere. Packing has demonstrated its unfitness for the joint between the head and replaceable tip of an oxy-acetylene torch.

Neither of these references is an anticipation by itself; and no authority is known for associating a manifestly inoperative patent with another patent to make out a case of lack of invention. Applicant is the first to produce the combination of claim 1, and in so doing he has devised a construction far better in every way than anything that has preceded it. In view of these considerations it is submitted that any doubt must be resolved in the applicant's favor. Al-

lowance of claim 1 as amended is therefore solicited. New claim 2 is drawn to similar subject-matter and is equally allowable.

The other claims as amended are believed to be clearly allowable. Neither Williams nor Delcampe shows an independent longitudinal passage formed in the same tip which has a mixing passage and its [fol. 354] inlets. The structure claimed is manifestly novel and it is not seen how the language can describe it any more definitely.

Probably the rejection of former claim 11, now claim 10 was inadvertent, as Williams has no cooling passage.

Very respectfully, J. C. Brandenberg, Attorney for applicant.

October 25, 1911, 2 Rector Street, New York.

[fol. 355] Address only the Commissioner of Patents, Washington, D. C.

Serial No. 612,189

C. W. J.

Department of the Interior,
United States Patent Office,
Washington, Nov. 16, 1911.

John Walter Whitford, Assor., c/o J. F. Brandenburg, New York, N. Y.:

SIR: Your application for a patent for an improvement in Welding or Cutting Apparatus, filed March 4, 1911, has been examined and allowed.

The final fee, twenty dollars, must be paid not later than six months from the date of this present notice of allowance. If the final fee be not paid within that period the patent on this application will be withheld, unless renewed with an additional fee of $15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, distinctly and plainly written, the name of the inventor and title of invention as above given, date of allowance (which is the date of this circular), date of filing, and, if assigned, the names of the assignees.

If you desire to have the patent issue to assignees, an assignment containing a request to that effect, together with the fee for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of five cents each. The money should accompany the order. Postage stamps will not be received.

Final fees will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully, E. B. Moore, Commissioner of Patents.

[On left margin:] In remitting the final fee give the serial number at the head of this notice.
[On right margin:] Uncertified checks will not be accepted.

[fol. 356] 2—073

Department of the Interior,
United States Patent Office,
Washington, D. C., Apr. 3, 1912.

Petition

Application of J. W. Whitford.
Serial No. 612,189.
Invention: Welding or Cutting Apparatus.
This petition is referred to the Examiner in charge of Division 30 for recommendation. In case he recommends adversely he will state his reasons therefor.

E. B. Moore, Commissioner of Patents.

[fol. 357] Hon. Commissioner of Patents.

SIR: It is respectfully recommended that the above amendment be entered under Rule 78.

M. R. Sullivan, Examiner, Div. 30.

April 4, 1912.
O. K. Notice sent.

Approved Apr. 4, 1912. F. A. Tennant, Assistant Commissioner.

[fol. 358] In the United States Patent Office

Re Application of John Walter Whitford for a Patent on Improvements in Welding or Cutting Apparatus. Filed March 4, 1911. Serial No. 612,189. Allowed November 16, 1911.

April 2, 1912.

Hon. Commissioner of Patents, Washington, D. C.

SIR: Permission is requested under Rule 78 to amend the above-entitled application as follows:

Cancel claims 3, 4, 5, 6, 9 and 11.
Claims 3, 4, 5, 6 and 9 will be transferred to a divisional application, with a view to preserving the best line of division between the two cases. Claim 11 is found to be a substantial duplicate of claim 9 and will not be transferred.
Claims 7 and 8, line 6 of each, cancel "gas for cooling" and insert: *gaseous cooling medium.*
Claim 7, line 8, and claim 8, line 10, cancel "gas" and insert: *medium.*

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41. _____
42. _____
43. _____
44. _____
45. _____
46. _____
47. _____
48. _____
49. _____
50. _____

361

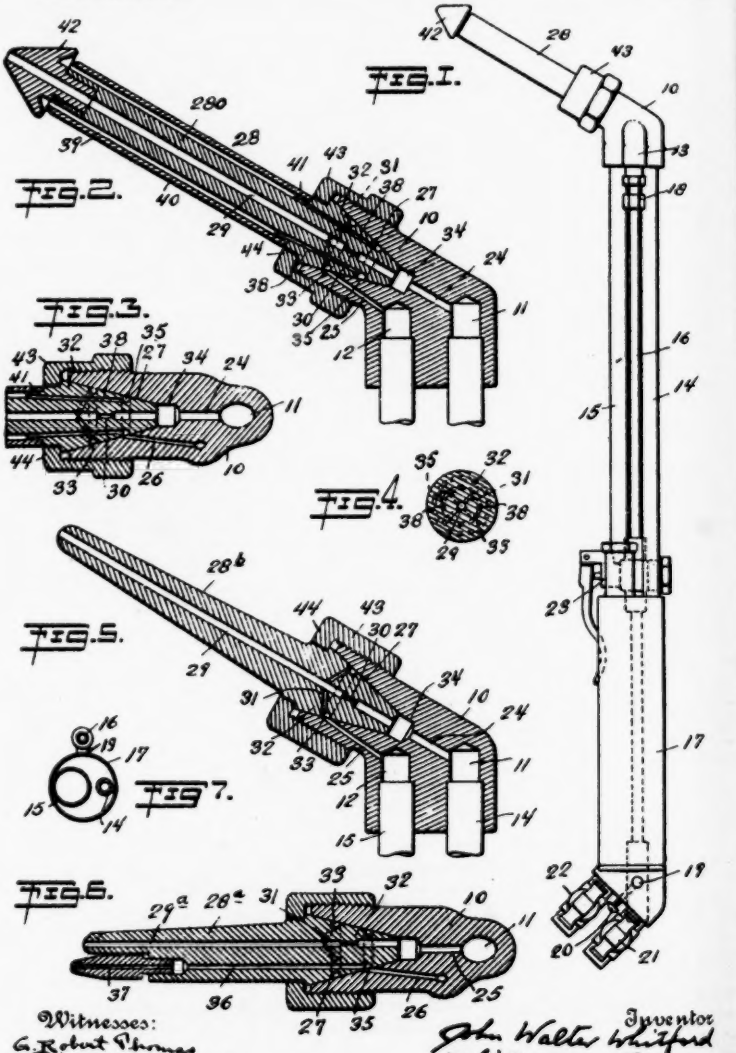
J. W. WHITFORD.

WELDING OR CUTTING APPARATUS

APPLICATION FILED MAR. 4, 1911.

1,028,166.

Patented June 4, 1912.



Witnesses:
G. Robert Thomas
Joseph A. Brady Jr.

Inventor
John Walter Whitford
By his Attorney
O. B. Sunderland

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN WALTER WHITFORD, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO DAVIS-BOURNONVILLE ACETYLENE DEVELOPMENT COMPANY, OF PIERRE, SOUTH DAKOTA, A CORPORATION OF SOUTH DAKOTA.

WELDING OR CUTTING APPARATUS.

1,028,166. Specification of Letters Patent. Patented June 4, 1912.

Application filed March 4, 1911. Serial No. 612,189.

To all whom it may concern:

Be it known that I, JOHN WALTER WHITFORD, a citizen of the United States, a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Welding or Cutting Apparatus, of which the following is a specification.

This invention relates to apparatus for heating, brazing, welding or cutting, or otherwise treating, metals by means of jets of gases directed upon the work.

The apparatus is designed more especially for using oxygen and acetylene under pressure. Such a device is commonly known as an oxy-acetylene torch or blow-pipe. In such apparatus it is customary to supply a number of removable and interchangeable tips for each torch or head, these tips varying in size and in the dimensions of the passages therein so that flames of different sizes and qualities for different kinds of work may be had.

In the form of apparatus which has proved practically successful the mixing of the combustible and combustion-supporting gases for the heating or welding flame is effected in the tip, the gases being kept separate until after they enter the tip. In this form of apparatus it is of the greatest importance to provide sure seals at the joint between the head and tip, both to seal the different kinds of gases from each other and from leakage outside of the torch.

One of the objects of the invention is to provide improved sealing means for this purpose.

The object is, further, to provide seals for as many ducts as may lead from the head into the tip.

Another object of the invention is to provide means for leading gaseous fluid other than the oxygen and acetylene for the flame through the head into the tip.

A special object is to lead such fluid through the sealing seats provided at the junction of the head and tip. Such fluid may be, for example, oxygen, usually under higher pressure than the other oxygen stream, for cutting, or air or other gaseous medium for cooling the tip and the gases passing therethrough.

The invention consists first in a detachable and interchangeable tip having means for mixing the gases for the flame therein, and a head for supplying the tip with these gases, the tip and head being formed with similar external and internal similar abrupt-angled conical seats, in which is formed an annular channel or channels for establishing communication at all relative positions of the head and tip. This annular channel, while preferably narrow for economy of space, affords a chamber of suitable capacity for supplying the communicating inlet or inlets in the head.

The conical seats contemplated by this invention have the distinctive property of separating freely upon removal of the external axially directed pressure holding the tip to the head. Such a structure is entirely different in nature and properties from a mere gentle taper. Such a taper joint is self-holding, and the less the taper the easier it is to wedge the male member irremovable into its taper socket. Such a taper joint is therefore inoperative for an oxy-acetylene blow-pipe, one of the first requirements of which is ease in interchanging the tips. When it is considered that the head and tip are drawn together by screw means, with which there is always a tendency to exert more force than is necessary, and that the head and tip remain clamped together for periods of rest that are often considerable and during which the joint is more or less effected by heat and probably also by the gases, it will be apparent why a gently tapered joint would render a torch useless because of the jamming of the tip. But with a conical joint of sufficiently abrupt angle the properties are exactly reversed. Whereas with such a taper joint as described, the greater the external compression the more the reaction of the socket, owing to friction, locks the male member against removal, with this conical joint the more the external compression the more the reaction tends to force the tip out of the socket. Hence, while with conical seats absolutely gas-tight seals may be formed at both sides of the annular channel under the action of a separate compression member, such as a screw coupling, the tip is held in place by this coupling and not by the grasp of the conical socket, and upon release of the coupling the seats separate freely. Such conical seats should, however, be formed of sufficient acuteness of angle and

of sufficiently long sides to insure ample seals at both sides of the annular channel or chamber, or alternating with as many annular channels as may be employed.

The invention also consists in a torch or the like in which a gaseous fluid, other than the oxygen and acetylene for the flame, is brought into the passage therefor in the tip, through the head, and preferably through the sealing seats between the head and tip, such seats being conical as just described or even of other form. Thus, the invention includes both a novel form of air-cooled torch and a novel form of cutting torch, according to whether the gaseous fluid is air or other gaseous medium for cooling led to a suitable passage in the tip, or oxygen for cutting led to a special passage in the burner tip arranged to play upon the work.

In the accompanying drawings showing by way of illustration certain preferred embodiments of the invention: Figure 1 is a side elevation of the torch with an air-cooled tip; Fig. 2 is an enlarged section through the head and tip of this form of torch; Fig. 3 is a section at right angles to the last, the tip being partly broken away; Fig. 4 is a cross-section through the rear conical portion of the tip shown in these views; Fig. 5 is a view corresponding to Fig. 2, showing a welding tip without air-cooling; Fig. 6 is a section on a plane corresponding to that of Fig. 3 showing a cutting tip in the head; and Fig. 7 is a cross-section through the handle portion of the torch.

In these views the numeral 10 indicates the head, which is preferably a casting of suitable form. Three sockets 11, 12 and 13 are formed in the lower portion of this head, and three pipes 14, 15 and 16 have their ends secured therein. The pipes 14 and 15 are preferably permanently, or semi-permanently secured to the head, and together with the casing 17 constitute a convenient handle for the torch. As heretofore, the portion of the acetylene pipe or conduit 15 inside this casing may be enlarged for the reception of material for protecting the acetylene generator or tank from a flash-back, while the oxygen pipe 14 merely passes through the casing as a matter of convenience. The pipe 16 may be, and preferably is, detachably connected to the head, as by means of a screw coupling 18, and with the handle, as by means of a laterally-projecting arm 19 clamped in a hole by means of a screw 20. The three pipes or conduits are provided with suitable controlling valves 21, 22 and 23. The valve 23 is preferably merely a cut-off valve, but this is not material.

The sockets 11, 12 and 13, together with the three drilled passages 24, 25 and 26 leading therefrom, constitute separate conduits in the head. The front part of the head is provided with a conical socket 27 for the tip, and the three conduits open into this socket. In the preferred construction, the oxygen conduit 24 opens axially at the back of the socket, and the conduits 25 and 26 through the side of the socket, one in advance of the other.

The tip 28, 28^a 28^b has a narrow longitudinal mixing passage or drilled opening 29 or 29^a encircled by thick walls. This passage has its discharge orifice at the front end of the tip so as to play upon the work. At the rear the tip is provided with two kinds of inlets for leading the two kinds of gases for combustion to said mixing chamber. The arrangement of these inlet passages may be varied. Preferably, there is a single axial restricted inlet 30 for the oxygen and lateral inlets 31 for the acetylene. The acetylene inlets may be, and preferably are, inclined to the mixing passage. The number and size of the inlet passages may be varied according to the particular results desired. The mixing passage 29 may be arranged axially within the tip, as shown at 29 in Fig. 2, or eccentrically, as shown at 29^a in Fig. 6.

The rear part 32 of the tip that enters the head is conical, the angle thereof and of the conical socket 27 being the same and comparatively abrupt. Both conical faces are preferably ground smooth. An annular passage, channel or recess 33 is formed within the area of these conical seats, being positioned so as to communicate directly with the acetylene conduit 25 and the acetylene inlets 31. Preferably, though not necessarily, this annular channel is formed in the conical tip portion 32. While narrow, this channel forms an edequate chamber or reservoir for the supply of the acetylene inlets. An oxygen chamber 34 may also be provided at the back of the socket 27. The zones of the conical seats at opposite sides of this annular channel form sure and ample seals, on the one hand sealing the oxygen and acetylene from each other before entering the tip and on the other hand sealing against leakage through the joint outside the torch.

The two forms of tip are provided also with a second annular passage 35 within the area of the conical seats, which annular passage may also be formed in the tip. This annular passage or recess communicates directly with the third conduit 26 in the head when the tip is in place. The conical seat sections at opposite sides of this annular communication-establishing passage form sure and ample inner and outer seals with respect to this passage, as in the other case.

In the form of tip shown in Fig. 6 the second annular passage 35 communicates with a longitudinal passage or drilled opening 36, independent of the mixing passage 29^a, which is designed to convey cutting oxygen. In the preferred construction the

portion of the tip containing this oxygen passage terminates considerably short of the front end of the tip, and the passage is continued by a removable nozzle or sub-tip 37 secured to said portion, as by being screwed therein. By this means the oxygen duct is caused to discharge alongside the duct for the heating mixture, and preferably slightly in advance thereof.

In the form of tip shown in Figs. 2, 3, and 4 the annular passage 35 communicates by means of inlets 38 with a longitudinal passage 39, annular in cross-section, which surrounds the mixing passage 29. While this sheath-like passage may be formed in a variety of ways, I prefer to secure a sleeve 40, by forcing or otherwise, on an annular shoulder 41 at the base of the body part 280 of the tip; the sleeve constituting part of the tip. When this form of tip is used and the pipe 16 is connected up with a source of air under pressure, or other suitable cooling gas, instead of oxygen for cutting as in the other instance, a cooling envelope is caused to flow along or over the tip. In order to prevent this annular stream of air from mingling with the flame, a shield 42 is attached to or formed on the front end of the tip, this shield being constructed and arranged to cause the air discharged from the passage to flow back over the tip.

In both forms of tip the base of the conical part 32 is preferably larger than the adjacent part of the tip. A coupling sleeve 43 engages threads or their equivalents on the head and by means of a flange 44 presses upon this enlarged base, so as to draw the tip into the head and hold it there.

Fig. 5 illustrates a welding tip 28ª without the air-cooling feature attached to the same form of head shown in the other views. This tip is essentially similar to the other forms of tip illustrated, except that it is provided with neither the annular air passage 39 nor the cutting oxygen passage 36, and consequently lacks also the annular passage 35.

In operation, the tips are instantly attachable to or detachable from the head. The conical seats separate at once upon unscrewing of the coupling. With the same torch body, either a cutting torch, an air-cooled torch or a welding torch without air-cooling may be had, by attaching one kind of tip or the other and by connecting with a source of air or cutting oxygen under pressure or neither, as the case may be. The oxygen and acetylene for the welding or cutting flame also preferably enter the torch under considerable pressure.

A material advantage of the torch provided with the cutting tip shown in Fig. 6 is that the tip may be swiveled in the head and then clamped so as to bring the jets [illegible] mixing passage 29ª and the cutting oxygen passage 36 into alinement with the desired line of cutting, with the heating flame in the lead, the passage 36 being always in communication with the duct in the head for cutting oxygen by virtue of the annular passage 35. It is the practice to advance the heating and cutting jets along the line of the cuts with the heating jet in the lead, and in order to do this, heretofore, it has often been necessary to hold the torch in an awkward manner. With my construction the torch can be held in the most convenient manner and the cutting tip adjusted so as to cut in any direction.

While I have shown and particularly described certain embodiments of my invention, it will be understood that many substitutions, omissions and changes may be made without departing from the invention.

I claim:

1. A device of the character described comprising a head provided with a conical socket and separate conduits for combustible and combustion-supporting gases, a burner tip provided with a mixing and discharge passage, separate inlets for the two kinds of gases to said passage and a conical rear portion, the surfaces of said conical tip portion and conical socket being formed as similar abrupt-angled freely-separable conical seats, of a conicity greater than the critical angle of sticking, said seats having an annular channel formed between them intermediate their length for placing one kind of said inlets in communication with the corresponding conduit in the head, the portions of the seats at opposite sides of said channel affording inner and outer gas-tight seals of ample width, and means for forcing the tip and head together, said tip being held in place by said means alone.

2. A device of the character described comprising a head provided with a conical socket and separate conduits for combustible and combustion-supporting gases, a burner tip provided with a conical rear portion, a mixing and discharge passage, and separate inlets for the two kinds of gases to said passage, the inlet for one of the gases opening through said conical portion, the surfaces of said conical tip portion and conical socket being formed as similar abrupt-angled freely-separable conical seats of a conicity greater than the critical angle of sticking, these seats having portions at opposite sides of the inlet through the conical portion of the tip affording inner and outer gas-tight seals of ample width, and means for forcing the tip and head together, said tip being held in place by said means alone.

3. A device of the character described, comprising a head and a removable and replaceable tip supported and supplied thereby, said tip having a mixing passage discharging at its forward part and inlets

thereto at its rear part for the two kinds of gases to be mixed, said tip having also an independent longitudinal passage for a gaseous cooling medium, said head having conduits communicating with said inlets and a third conduit communicating with said passage for cooling medium, and the head and tip being further provided with coöperating sealing seats, sealing the three kinds of fluids from each other and from the atmosphere where the conduits in the head communicate with the said inlets and passage.

4. A device of the character described, comprising a head and a removable and replaceable tip supported and supplied thereby, said tip having a mixing passage discharging at its forward part and inlets thereto at its rear part for the two kinds of gases to be mixed, said tip having also an independent longitudinal passage for a gaseous cooling medium, said passage being annular in cross-section and encircling said mixing passage, said head having conduits communicating with said inlets and a third conduit communicating with said passage for cooling medium, and the head and tip being further provided with coöperating sealing seats, sealing the three kinds of fluids from each other and from the atmosphere where the conduits in the head communicate with the said inlets and passage.

5. In a device of the character described, a tip having a mixing passage and inlets thereto for the two kinds of gases and also a longitudinal passage for gaseous cooling fluid, and a head provided with conduits for supplying said inlets and another conduit therein for leading cooling fluid to said cooling passage.

6. Apparatus of the character described, comprising a head, three separate conduits for gaseous fluids leading into said head, said conduits being extended separately within the head, and a tip provided with a mixing passage and two sets of inlets thereto supplied by two of said conduits, said tip being also provided with a passage for a cooling gaseous medium, said passage being supplied by the third conduit.

7. In a device of the character described, a head having conduits for welding gases and a conduit for a gaseous fluid for cooling, and a removable burner structure having sealing engagement with the head, said burner structure being provided with a longitudinal passage for the welding gases and an encircling longitudinal passage annular in cross-section for the cooling fluid said passages both being provided at the rear with inlets and means establishing communication between said inlets and conduits irrespective of relative rotation, and a shield on the forward end of the burner structure constructed and arranged to deflect the current of cooling fluid backward.

8. In a device of the character described, a head having conduits for welding gases and a conduit for a gaseous fluid for cooling, and a removable burner structure having sealing engagement with the head, said burner structure comprising a body having a shoulder on its rear part and a longitudinal passage therein for welding gases, a sleeve secured on said shoulder and forming with the body a passage annular in cross-section, the body part of the burner structure having inlet passages leading to said annular passage and an annular groove communicating on the one hand with said inlets and on the other hand with the conduit for cooling fluid in the head.

In witness whereof I have signed my name in the presence of two subscribing witnesses.

JOHN WALTER WHITFORD.

Witnesses:
C. B. WORTHAM,
WM. W. BARNES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Claim 7, line 10, and claim 8, line 12, cancel "gases" and insert: *fluids.*

Renumber claims 7, 8 and 10 as 3, 4 and 5.

Renumber claims 12 to 14 as 6 to 8.

It is believed that the foregoing changes in language are desirable. Air is a gas, but there is a possibility that the reference to a gas for cooling might be confusing.

Very respectfully,

J. F. Brandenburg, Attorney for Applicant.

2 Rector Street, New York.

[fol. 359] $20 received May 4, 1912. Chief Clerk, U. S. Patent Office. Ck. S. .

Solicitor of U. S. and Foreign Patents

Phone Rector 599

May 3, 1912.

The Commissioner of Patents, Washington, D. C.

SIR: Enclosed please find $20, being the amount of the final fee in the matter of the application of John Walter Whitford for a patent on Welding or Cutting Apparatus, filed March 4, 1911, Serial No. 612,189, and allowed November 16, 1911.

Very respectfully, J. F. Brandenburg.

(Enclos.)

JFB/EG.

(Here follow side folio pages 360, 361, 362, 363, 364, and 365; side folio pages 366 to 609, inclusive, omitted in printing.)

[fol. 610] IN UNITED STATES DISTRICT COURT

DEFENDANT'S EXHIBIT R

Department of the Interior,
United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the File Wrapper and contents, in the matter of the Letters Patent of Harlon A Clifford, Number 1,016,613, Granted February 6, 1912, for Improvement in Torches.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this seventeenth day of November, in the year of our Lord, one thousand nine hundred and twenty-three and of the Independence of the United States of America the one hundred and forty-eighth.

Wm. A. Kinnan, Acting Commissioner of Patents. (Seal.)

[fol. 611] 2—437

Div. [3]* 30
Number (Series of 1900)
605,741

Div. 30.
(Ex'r's Book)
[110/14-F* 34/8]*

—— —, 1911

Patent No. 1,016,613.
Name: Harlon A. Clifford,
of Jersey City,
County of ——,
State of New Jersey.
Invention: Torch.

Parts of Application Filed	Original	Renewed
	Petition January 31, 1911.	—— —, 191-.
	Affidavit, " ", 1911.	—— —, 191-.
	Specification, " ", 1911	—— —, 191-.
	Drawing, " ", 1911.	—— —, 191-.
	Model or specimen, —— —, 191-.	—— —, 191-.
	1. First Fee, Cash, $15, Jan. 31, 191-.	—— —, 191-.
	"Appl. filed complete Jan. 31, 191-.	—— —, 191-.
	First Fee, Cert., —— —, 191-.	—— —, 191-.

Examined: M. R. Sullivan, Ex., Dec. 8, 1911. —— —, [191-]*
Allowed: H. B. Burch, —, [191-]*
For Commissioner For Commissioner.
Notice of Allowance, Dec. 12, 1911. —— —, 191-.
Final Fee, Cash, $20, Jan. 10, 1912 —— —, 191-.
" " Cert., —, —— —, 191-. —— —, 191-.
Patented February 6, 1912.
2. Attorney-: C. A. Snow & Co. City.
Associate Attorney: —— ——.
3. No. of Claims Allowed: 7. Title as Allowed: Torch. (158-109.)
Division of App., No. —, filed —— —, 191-.

[*Words and figures enclosed in brackets erased in copy.]

[fol. 612] U. S. Patent Office,
Feb. 2, 1911,
Div. 3.

Paper No. —,
Mar. 4, 1911,
Division XXX.

Printed Letterhead Omitted

$15 Received Jan. 31, 1911. D. Chief Clerk, U. S. Patent Office

Serial No. 605,741, Paper No. 1, Application

Application for Letters Patent

I. Petition and Power of Attorney

To the Commissioner of Patents.

SIR: Your Petitioner, Harlon A. Clifford a citizen of the United States, residing at Jersey City in the County of Hudson and State of New Jersey and whose P. O. address is 143 Van Reipan Ave., Jersey City, N. J. prays that Letters Patent may be granted to him for the Torch set forth in the annexed Specification.

And he hereby appoints C. A. Snow & Co. (C. A. Snow and C. E. Doyle, members) as his attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and transact all business in the Patent Office connected therewith.

Registration No. 340.

Harlon A. Clifford.

II. Specification

To all whom it may concern:

Be it known that I, Harlon A. Clifford, a citizen of the United States, residing at Jersey City in the County of Hudson and State of New Jersey have invented a new and useful Torch of which the following is a specification:

[fol. 613] Sub. C^1.

It is the object of this invention to provide a device for cutting and welding by means of a gas and ozygen flame, the device being so constructed that the cutting and welding elements may be swung about to assume any desired angles with respect to the handle portion of the structure. Another object of the invention is to provide a device of this character, which may be employed for cutting or for welding, alternately, at will. Another object of the invention is to provide novel means for conducting the fluids through the tool, irrespective of the positions of the parts. A further object of the invention is to provide novel means for assembling constituent elements

of the device, and to provide means whereby a flashback will be prevented.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter [fol. 614] described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings,—

[Insert A^1, B^1.]* [Figure 1 is a sectional elevation of the $\overset{\wedge}{B^1}$ torch, $\overset{\wedge}{A^1}$ the tip-carrying end of the structure being sectioned along the line K-L of figure 2;

Figure 2 is a fragmental top plan;]*

Figure 3 is a transverse section through the handle portion of the structure, on the line A-B of figure 1;

Figures 4 and 5 are transverse sections upon the line of Fig. 1

Per A. C-D $\overset{\wedge}{A^2}$, looking in opposite directions in the two

[Insert A^2.]* views;

Figure 6 is a transverse section on the line E-F of figure 1;

Figure 7 is a transverse section on the line G-H of figure 1;

Figure 8 is a detail perspective of the plug which is inserted into the structure at the base of the welding tip; and

Figure 9 is a transverse section showing a modified form of nozzle. [fol. 615] In carrying out the invention there is provided a tubular handle 1, equipped at its base with a head 2, carrying valves 3, 4 and 5, of any desired form, the valves being conventionally indicated. The valve 3 controls a gas supply pipe 6, the valve 4 controls an oxygen supply pipe 7, and the valve 5 controls another oxygen supply pipe 8, these pipes 6, 7 and 8, entering the head portion 2 of the handle 1.

Located within the handle 1, is a tube 9 with which

Insert A^3. the pipe 6 communicates, the tube 9 being $\overset{\wedge}{A^3}$ [supplied with facings 10, preferably of wire gauze],* the interior of the tube 9 being filled with a packing 11, preferably

Per A. [fashioned from]* asbestos. As denoted by the numeral 12, the pipe 8 is extended through the tubular handle 1, the pipe 7 being extended through the handle in a like manner, as indicated at 14, and as seen most clearly in figure 3. As shown at 15, the portions of the oxygen supply pipes 7 and 8 which are located within the tubular handle 1, may be packed with asbestos

Per A. or the like, [as shown at 16,]* the packings 11 and 15 serving to prevent a flashback of the ignited gases.

[*Words and figures enclosed in brackets erased in copy.]

The handle 1 is equipped with a closure cap 16, through which the pipes 7 and 8 protrude, a pipe 17 being united with closure cap 16, by means of a suitable connection 18, to afford communication with the interior of the tube 9, the tube 9 and the pipe 17 forming continuations of the gas supply pipe 16.

Insert B^3. The pipes 17, 7 and 8, enter a head 19. $\wedge_{B^3}$ In the [fol. 616] inner face of this head 19 there is a groove 20, circular in outline, and communicating by means of a duct 21, with the pipe 17. In the face of the head 19 there is another annular groove 22, communicating by means of a duct 23 with one of the oxygen supply pipes 7. There is a third annular groove 24 in the said face of the head 19, the groove 24 communicating by way of a duct 25 with the other oxygen supply pipe 8.

Per A. The several annular grooves 20, 22 and 24 [mate]* $\wedge_{\text{register}}$ with similar grooves in one face of the body 26 of the " " nozzle portion of the device, [the body 26 of the nozzle and the head 19 being preferably, although not necessarily, halved into each other, as shown in figure 2.]* The head 19 and the body 26 are held or relative rotation, by means of a pivot element 27, so that the nozzle portion of the structure may be swung about at any angle, with respect to the handle 1, the communicating, annular grooves in the adjacent faces of the head 19 and the body 26, permitting a free passage of the gases from the handle into the nozzle, no matter what relative angles the handle and the nozzle may assume with respect to each other.

Per A. In the [head]* $\wedge_{\text{body}}$ 26 of the nozzle, there is a longitudinally extended passage 28, communicating at one end with the groove 24, and at the other end communicating with an annular groove 29, formed in the outer end face of the body 26. There is another longitudinal passage 30 in the body 26, this passage 30 communicating at one end with the annular groove 20, and at the other end opening through the outer end face of the body 26. [fol. 617] In the body 26 there is a third passage 31, communicating at one end with the groove 22, and at the other end communicating with an annular groove 32 in the outer end face of the body 26, the passages through the device being continuous, irrespective of the angular relations between the nozzle portion of the device and the handle.

It is to be understood that the annular grooves 29 and 32 in the

Per A. outer end face of the body 26, may be packed $\wedge_{\text{as at 100}}$ with asbestos and metallic gauze, and by reason of this construction, together with the fact that the packings 11 and 15 are interposed within the handle 1, a flash-back of the ignited material will be prevented.

[*Words and figures enclosed in brackets erased in copy.]

The invention further includes a cap 34, applied to the outer end face of the body 26, and held in place thereon by a collar 36, engaging the cap 34, the collar being preferably threaded upon the body 26. In the inner end face of the cap 34 there is an annular groove

registering

Per A. 33, ∧ [mating]* with the annular groove 29 in the outer

nozzle structure includes a

" " end face of the body 26. The ∧ cap 34 [is]* preferably

proper

" " formed integrally with a nozzle ∧ 35, longitudinally recessed to receive a tube 38, carrying a removable cutting tip 39, the tube 38 being removably inserted into cap 34, there being in the cap 34, a passage 37, forming a communication between the

registering

Per A. bore of the tube 38 and the ∧ [mating]* annular grooves 29 and 33.

The cap 34 is recessed to receive a removable

plug

" " [thimble]* 40, having a central passage 41, communicat-

[fol. 618] ing with the passage 30, and with the bore 42 of the nozzle

plug

Per A. 35. In the side walls of the [thimble]* 40, there are, as shown in figure 8, inclined grooves 44, communicating at one end with the annular groove 32 in the outer end face of the

inwardly

body 26, the grooves 44 being extended ∧ across the end face of the

plug

Per A. [thimble]* 40, [tangentially],* as denoted by the

plug

" " numeral 45. In advance of the [thimble]* 40, the cap 34 is recessed, to form a mixing chamber, as shown at 43

Presupposing that all of the controlling valves 3, 4 and 5 are open, the gas which is to be burned, will enter the pipe 6, pass into and through the tube 9, the gas traversing the pipe 17 and passing by

registering

Per A. way of the duct 21 into the [mating]* annular grooves 20 in the adjacent faces of the head 19 and the body 26. From these grooves 20, the gas will pass by way of the passage 30 in the body 26, and by way of the central pas-

spot

Per A. sage 41 in the [thimble]* 40, into the mixing chamber 43, and then through the bore 42 of the nozzle 35.

The oxygen entering the pipe 7, will pass through the

registering

Per A. handle 1, and by way of the duct 23 into the [mating]* annular grooves 22 in the adjacent faces of the head 19

registering

" " and the body 26. From these [mating]* grooves 22, the oxygen will pass by way of the passage 31 into the annular groove 32, and thence by way of the inclined grooves

[*Words and figures enclosed in brackets erased in copy.]

plug
Per A. 44 in the outer face of the [thimble]* 40, into the mixing chamber 43, and thence with the gas which is simultaneously delivered into the mixing chamber 43, through the bore 42 of the nozzle 35.

The oxygen entering the pipe 8, will pass through the handle 1, the oxygen passing from the pipe 8, by means of the duct 25, into registering
Per A. the [mating]* annular grooves 24 in the adjacent faces registering
" " of the head 19 and the body 26. From these [mating]* grooves 24, the oxygen will enter, by way of the passage registering
" " 28, into the [mating]* annular grooves 29 and 33 in the abutting faces of the body 26 and the cap 34. From registering
" " these [mating]* grooves 29 and 33, the oxygen will traverse the passage 37, and enter the bore of the tube 38, the [fol. 619] oxygen ultimately traversing the bore of the cutting tip 39.

When the device is to be used for welding purposes, the tube 38 and the tip 39 may be removed from the cap 34, the valve 5 being closed. When, however, the element 39 is to be employed for cutting purposes, the parts will be disposed in the positions shown in figure 1.

Obviously, the tube 38, the tip 39, and the nozzle 35 constitute what, for convenience, may be denominated the burner portion of the device. By reason of the fact that, as clearly shown in figure 7, the nozzle 35 is longitudinally grooved as shown at 47, to receive the tube 38, the constituent elements of the burner part of the structure, are held in proper positions against relative movement.

Owing to the inclination given to the grooves 44 in the plug
Per A. [thimble]* 40, and owing to the fact that these grooves inwardly
" " are extended [tangentially]* across the end face of the thimble 40, as shown at 45, a thorough admixture of the oxygen and the gas which is employed for combustion purposes, will take place in the mixing chamber 43 which plug
Per A. is located in advance of the [thimble]* 40, the oxygen traversing the grooves 44, being given a spiral mo-
[Insert B^2.]* tion, as it enters the mixing chamber 43. [The modified form of the invention shown in figure 9 may be dismissed with the brief explanation that when desired, there may be any number of supplemental passages 46 in the nozzle 35′, these passages 46 being disposed about the bore 42′ of the
[Insert A^4.]* nozzle.]^*
[A^4]*

[Matter enclosed between rules erased in copy.]

[*Words and figures enclosed in brackets erased in copy.]

Having thus described the invention, what is claimed is:

1. In a device of the class described, a head and a registering
Per A. body having [mating]* annular grooves in their faces; means for binding the head and the body together for relative angular movement, and for holding said faces in maintain in registration
Per A. intimate contact to ∧ [aline]* the grooves ∧ ; a burner carried by
" " ∧ [in]* the body, having separate communications with the grooves; a handle carried by the head; and pipes in the handle, each communicating with a groove.

[Matter enclosed between rules erased in copy.]

Canceled Per B

2. In a device of the class described, a tubular han-
[Insert A[5].]* dle; a tube therein; a packing in the tube; a pipe ∧ A[5] [into which the tube is interposed;]* other pipes extended through the handle on one side of the adjacent end
Per A. tube; valves in the pipes ∧ [upon]* one [side]* adjacent
" " of the handle; a head receiving the pipes ∧ end [upon]* the other [side]* of the handle; a nozzle
[Insert A[6]]* connected with the head; ∧ A[6] a tip removably last named tube
Per A. mounted in the ∧ [nozzle]* along side of the nozzle;
" " there being passages in the head [forming communica- connecting the bore of the nozzle with with
" " tion between]* ∧ one of the last named pipes and ∧ the
" " first named pipe [upon the one hand, and the bore of the
" " nozzle upon the other hand];* there being another passage in the head forming a communication between the last named tube
" " other of said last named pipes and the bore of the ∧ [tip].*

[Matter enclosed between rules erased in copy.]
[*Words and figures enclosed in brackets erased in copy.]

2ᵇ [3].* In a device of the class described, a structure
Per A. body; a nozzle ∧ ; means for removably securing structure
" " the nozzle ∧ to the body; a tip; ∧ [removably se-
[Insert A⁷.]* [fol. 621] A⁷
cured to the nozzle;]* a handle with which the body is pivotally connected; and means for conveying a
Per A. structure
Per B. fluid to the nozzle ∧ and to the tip [independently],* through the handle, irrespective of the relative positions between the body and the handle.

3ᵇ [4].* In a device of the class described, a body; a nozzle removably secured thereto; a tube removably mounted upon the nozzle and provided with a removable tip; a handle with which the body is pivotally connected; separate fluid conduits leading through the handle and communicating with the bore of the nozzle; an independent conduit leading through the handle
[Insert B⁴.]* and communicating with the bore of the tube, ∧ B⁴
will have
Per B. the conduits [having]* communication with the nozzle and the tube, irrespective of the relative positions of the body and the handle.

4ᵇ [5].* In a device of the class described, a body; a structure
Per B. nozzle ∧ terminally abutting thereagaints; a collar threaded upon the body and adapted to engage the noz- structure structure
" " zle ∧ ; a tube removably connected with the nozzle ∧ ; a for
" " removable tip [in]* the tube; and means for supplying structure
" " fluid to the nozzle ∧ and to the tube.

5ᵇ [6].* In a device of the class described, a nozzle having a laterally extended cap; a tube removably seated in the cap, the nozzle [fol. 622] being longitudinally grooved to receive the tube; a tip removably seated in the end of the tube; a body; means for binding the cap upon the body; and independent passages in the body, communicating with the bore of the tube and with the bore of the nozzle.

6ᵇ [7].* In a device of the class described, a nozzle provided with and
Per B. a bore, enlarged at one end to form a mixing chamber; ∧

[*Words and figures enclosed in brackets erased in copy.]

Per A. a [thimble]* ∧ plug removably seated in the chamber and pro-
" " vided with diagonal grooves in its [outer]* side face, com-
" " municating with the mixing chamber, the [thimble]* plug having a central opening, likewise communicating with the mixing chamber.

7[b] [8].* In a device of the class described, a nozzle provided with a bore terminally enlarged to form a mixing chamber; and

Per A. Per B. ∧ a [thimble]* ∧ plug removably seated in the mixing chamber and having diagonally disposed grooves in its
" " " " side [outer]* face, extended [tangentially]* [inwardly]* upon
" " the end face of the [thimble],* plug within the mixing cham-
" " ber, there being an opening in the interior of the [thimble],* plug likewise communicating with the mixing chamber.

8[b] [9].* In a device of the class described, a body and a burner disposed in terminal abutment, there being concentric annular grooves in the meeting faces of the body and the burner; a packing disposed in said grooves; means for supplying fluid to the grooves upon one side of the packing; and means for establishing a communication between the bore of the burner and the grooves, upon the other side of the packing therein.

[Insert A[8].] >

[Matter enclosed between rules erased in copy.]

[fol. 623] In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

Harlon A. Clifford.

Two witnesses: Delavan Provost, Leo C. Clifford.

III. Oath

STATE OF NEW JERSEY,
County of Hudson, ss:

I, Harlon A. Clifford the above-named petitioner, being duly sworn, depose and say that I am a citizen of the United States, and resident of Jersey City County of Hudson and State of New Jersey and that I verily believe myself to be the original, first and sole inventor of the Torch described and claimed in the annexed specification; that I do not know and do not believe that the same was ever

---

[*Words and figures enclosed in brackets erased in copy.]

64-1-M

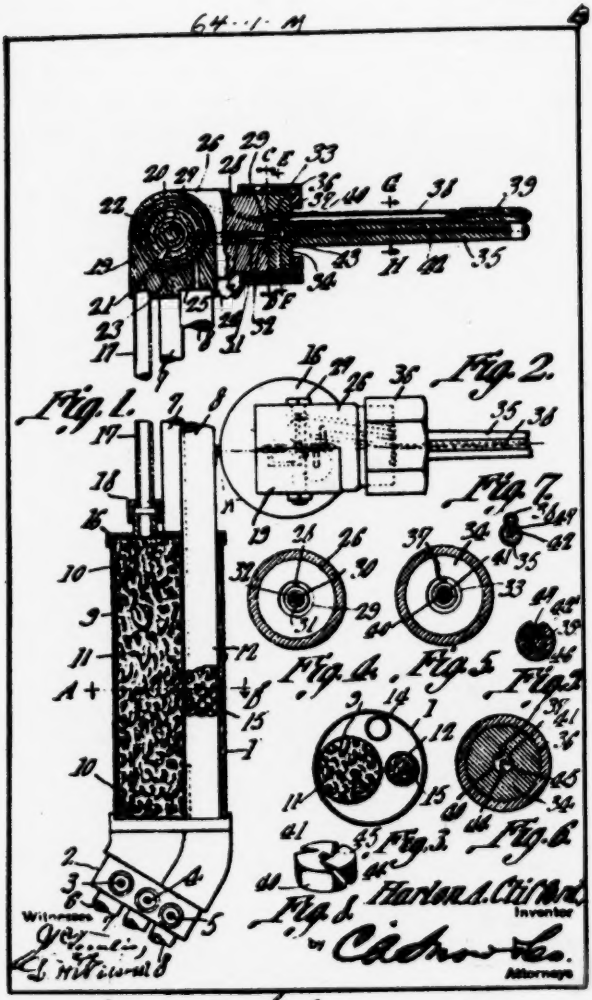


Fig. 1.

Fig. 2.

Fig. 7.

Fig. 4.

Fig. 5.

Fig. 3.

Fig. 6.

Fig. 8.

Witnesses

Harlan A. Clifford
Inventor

by Cachow & Co.
Attorneys

605.714-1

'07

known or used before my invention or discovery thereof; or patented or described in any printed publication in the United States of America or any country foreign thereto before my invention or discovery thereof or more than two years prior to this application or patented in any country foreign to the United States, on an application filed more than twelve months before this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent has been filed by me or my legal representatives or assigns in any country foreign to the United States.

Harlon A. Clifford.

Sworn to and subscribed before me this 28″ day of January, 1911. Leon Ervin, Notary Public, New Jersey. (Seal.)

(Here follows drawing marked side folio page 624.)

[fol. 625] Patent Office,
Mar. 8, 1911,
Mailed.

2—260

Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

Paper No. 2

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

A. M. F.

Department of the Interior,
United States Patent Office,
Washington, March 8, 1911.

H. A. Clifford,
C/o C. A. Snow & Co.,
Washington, D. C.:

Please find below a communication from the Examiner in charge of your application, Serial No. 605,741, Torch, filed Jan. 31, 1911.

E. B. Moore, Commissioner of Patents.

One figure of the drawing is not numbered or described.

Page 3, lines 11 and 12, the line A—B is not shown on Fig. 1 of the drawing as here described. Line 14, the figure on which line C—D appears should be given and the direction in which each of Figs. 4 and 5 is taken should be given. Page 4, line 11, "facings"

and, line 13, "fashioned" are used where their meanings are vague. Line 20, "as shown at 16" should be canceled.

Throughout the specification "mate" should be —register—.

Page 5, line 13, "halved into each other" is vague. Line 23, "head" should be —body—. Where passage 28 communicates with groove 24, passage 30 communicates with groove 20, and passage 31 communicates with groove 22 should appear on the drawing.

Throughout the specification "thimble" should be —plug—.

Page 7, line 6, and page 9, line 18, "tangentially" is inaccurate.

Page 9, last five lines, the modified form of the device should be fully described. The function of "passages 46" should be stated.

Claims 1, 2, 4, 7 and 8 are objectionable. In claim 1, line 2, "mating" is vague. Line 5, "aline" is vague. Line 6, "in the body" is inaccurate.

[fol. 626] In claim 2, line 3, "interposed" is vague. Line 5, "upon one side" should be —at one end—. Line 6, "side" should be —end— .

In claim 4, matter in line 9 duplicates matter in line 6.

In claims 7 and 8, "thimble" should be —plug—.

Claims 2, 3, 5, 8 and 9 are rejected as being for a device not disclosed. Claim 2, "a tip * * * mounted in the nozzle and alongside of the nozzle" is not disclosed. There are no passages disclosed "forming communications between one of the last named pipes and the first named pipe." Claim 3, "a tip removably secured to the nozzle" is not disclosed. Claim 5, "a tube removably connected with the nozzle" is not disclosed. Claim 8, "grooves * * * extended tangentially" are not disclosed. Claim 9, "a packing disposed in said grooves" is not shown.

The subject matter of claims 1, 4 and 7 appears allowable.

Claim 6 is allowed.

M. R. Sullivan, Examiner. C. J. S.

[fol. 627] Application Room,
Jun. 12, 1911,
U. S. Patent Office.

A. Paper No. 3

Jun. 13, 1911, Division XXX, Room 152

Paper No. 3

ML/W.

H. A. Clifford. Torch. Filed January 31, 1911. Serial No. 605,741

To the Commissioner of Patents.

SIR: Office action of March 8, 1911 noted.

Page 3 line 6 after the comma insert

A^1. —the connecting pipes being broken away and—

Line 14 after "C–D" insert —of Figure 6—.
Line 15 after the semicolon insert

A². —to the left in Figure 4 and to the right in Figure 5.—

Page 4 line 11 strike out "supplied * * * gauze," and insert

A³. —lined, as at 10, with wire gauze,—

Line 13 strike out "fashioned from".
Line 20 strike out "as shown at 16,".
Page 5 line 10 change "mate" to —register—. Line 11 cancel ", the body" through "figure 2." line 14. Line 23 change "head" to —body—.
Page 6 line 10 after "packed" insert —as at 100—. Line 20 change "mating" to —*registering*—. Line 21 before "cap" insert —*nozzle structure includes a*—. Same line cancel "is". Line 22 after "nozzle" insert —*proper*—. Line 27 change "mating" to —registering—. Line 30 change "thimble" to —plug—. Page 7 [fol. 628] line 1 change "thimble" to —plug—. Line 5 before "across" insert —*inwardly*—. Same line change "thimble" to —*plug*—. Line 6 cancel "tangentially". Line 7 change "thimble" to —*plug*—.
Page 8 lines 5, 13, 15, 24, 26, 27, and 29 change "mating" to —*registering*—. Lines 9, 18, change "thimble" to —*plug*—.
Page 9 lines 17 and 22 change "thimble" to —*plug*—. Line 18 change "tangentially" to —*inwardly*—. Line 29 change the period to a comma and insert

A⁴. —the passages 46 being for the same purpose as the bore 42'.

Claim 1 line 2 change "mating" to —*registering*—. Line 5 change "aline" to —*maintain*—. Same line after "grooves" insert —*in registration*—. Line 6 change "in" to —*carried by*—.
Claim 2 line 3 change "into which the tube is interposed" to

A⁵. —communicating with both ends of the tube—.

Line 5 change "upon one side" to —*adjacent one end*—. Line 6 cancel "upon the other side" and insert —*adjacent the other end*—.
Line 7 after the semicolon insert

A⁶. —a tube connected with the head;—.

Line 8 cancel "nozzle" and insert —*last named tube*—. Line 9 cancel "forming communications" and insert —*connecting the bore of*—. Line 10 cancel "between" and insert —*the nozzle with*—. Same line after "and" insert —*with*—. Line 11 cancel "upon * * * hand" line 12. Line 14 change "tip" to —*last named tube*—.

[fol. 629] Claim 3 line 2 after "nozzle" insert —*structure*—. Same line before "to" insert —*structure*—. Line 3 place a semicolon after "tip". Same line cancel "removably * * * nozzle" and insert—

A⁷. means for removably securing the tip to the nozzle structure;

Line 5 after "nozzle" insert —*structure*—.
Claim 7 lines 3 and 6 change "thimble" to —*plug*—.

Claim 8 lines 3, $\begin{bmatrix}6\\5\end{bmatrix}$ and 7 change "thimble" to —*plug*—. Line 5 change "tangentially" to —*inwardly*—.

Remarks

The Examiner's statement that one of the Figures of the drawings is not numbered or described, is thought to be inadverently erroneous. Figure 1 is broken, and the specification has been amended to bring out these facts.

In view of the foregoing statements, it is thought that the line A-B is properly described as appearing on Figure 1 of the drawings.

Permission is requested to amend Figure 1, as indicated in the appended sketch, with a view to showing the passages through the device. Permission is also requested to amend Figure 4, to show the packing 100, mentioned in claim 9.

With regard to claim 4, the matter in line 9 is not considered a duplicate of the matter in line 6. The matter in line 6 claims certain elements positively, and the matter in line 9 is merely an explanatory, functional statement.

Claims 2, 3, 5, 8 and 9 have been amended, and those portions of [fol. 630] the specification in which the subject matter of these claims is mentioned, have likewise been amended, so that, as the applicant understands the record, there is nothing in claims 2, 3, 5, 8 and 9, which is not now disclosed in the specification.

Add the following claim—

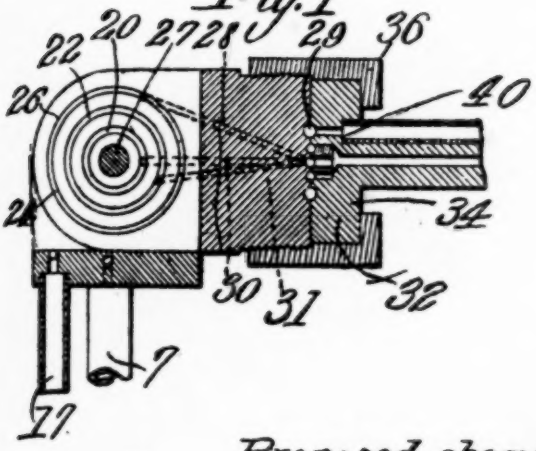
Per C

A⁸. 10. In a device of the class described a head and a body having registering annular grooves in their faces; means for binding the head and the body together for relative angular movement and for holding said faces in intimate contact, to maintain the grooves in registration; a burner carried by the body, having separate communication with the grooves; and means in the head for supplying fluid to the grooves.

[Matter enclosed between rules erased in copy.]

630A

Fig. 1



24

Proposed change in Fig. 1

Claim 10, as above submitted, is intended to embody the subject matter of claim 1, without the specific limitation imposed in claim 1, by the enumeration of a handle and pipes.

The applicant has made an effort to comply with all of the Examiner's suggestions, and it is thought that no formal matters now stand in the way of an early and favorable action.

All of which is respectfully submitted,

C. A. Snow & Co.

(Here follows drawing marked side folio page 630a)

[fol. 631] 2—260

Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

R. M. F.

Paper No. 4

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

Department of the Interior,
United States Patent Office,
Washington, June 22, 1911.

Patent Office.
Jun. 22, 1911
Mailed.

Harlon A. Clifford,
c/o C. A. Snow & Co.,
Washington, D. C.

Please find below a communication from the Examiner in charge of your application Serial No. 605,741, Torch, filed Jan. 31, 1911.

E. B. Moore, Commissioner of patents.

In response to amendment filed June 12, 1911.

The line K—L does not appear on Fig. 2.

The short description of Fig. 2 should state of what this figure is a plan.

The two parts of Fig. 1 are separate figures and should be so numbered and described. The upper part of this figure appears in error in that body 26 is not completely sectioned.

Page 4, line 11 as amended, the description of tube 9 as "lined with wire gauze" is new matter and must be canceled. The drawing shows wire gauze 10 at the ends of tube 9.

Page 5, line 24, to page 6, line 2, the drawing fails to show passage 28 communicating with groove 24, passage 30 communicating with groove 20, or passage 31 communicating with groove 22. The drawing shows only dotted lines and these end at points obscured in the drawing. A definite port should be shown in the grooves communicating with the passages.

Page 6, line 10 as amended, reference character 100 is not found of the drawing.

Page 9, last five lines as amended, the modified form of the device should be fully described. The object in making this modified form [fol. 632] should be given, the function stated and the purpose of the passage 46 should be stated definitely and independently of other parts of the device.

Applicant's remarks as to the showing of Fig. 1 are noted but are judged insufficient to avoid numbering separate figures by separate numbers as required by the Rules of Practice. The sketch submitted for amendment of Fig. 1 fails to show any definite section of the device, therefore it can not be approved.

Permission to show packing in grooves 29 and 32 of Fig. 4 as per sketch submitted is granted.

Claim 1 is rejected as applicant fails to disclose a "burner." The nomenclature of the claims must agree with the specification. Apparently the word "burner" is used to designate what is termed a "nozzle" in the specification, but as applicant fails to describe any part of his device as a "burner" the claim is rejected.

Claim 2 as amended is rejected as applicant fails to disclose "a pipe communicating with both ends of the tube."

Claim 2 is also rejected as being an aggregation of independent elements. There is no coaction between a specific form of handle and a specific form of nozzle for a blow pipe. Moreover, the construction of the handle is known and is shown, for example, in patent to Johnson, 969,875, Sept. 13, 1910, 158-109.

Claim 2 is objectionable in reciting a "handle" inferentially and not positively.

Claim 3 is rejected as applicant fails to disclose "a handle upon which the body is pivotally connected." Nor does he disclose "means for conveying a fluid to the nozzle structure and to the tip independently."

[fol. 633] Claim 4 is, upon reconsideration, rejected as applicant fails to disclose "a handle with which the body is pivotally connected." Applicant's remarks as to lines 6 and 9 of claim 4 are noted.

Claim 4 is also rejected as incomplete since the annular grooves in the faces of the body and head are a necessary part of the connection between the conduits, bore and tube.

Claim 5 stands rejected as being for a device not disclosed as applicant fails to disclose "a tube removably connected with the nozzle."

Claim 6 stands allowed.

Claims 7 and 8 are objectionable. In line 3 of each claim

—and—should be inserted after the semicolon. Line 5 of each claim, "outer" is indefinite. Claim 8, line 5, "inwardly" is indefinite.

Claims 9 and 10 are rejected as applicant fails to disclose a "burner."

M. R. Sullivan, Examiner. C. J. S.

[fol. 634] Application Room
Sep. 11, 1911,
U. S. Patent Office.

B. Paper No. 5

Sep. 12, 1911, Division XXX, Room 152

Paper No. 5

ML/BAS.

Harlon A. Clifford. Torch. Filed Jan. 31, 1911. Serial No. 605,741

The Commissioner of Patents.

SIR: Office action of June 22, 1911 at hand and contents noted.

The line K-L has been applied to Figure 2.

Strike out lines 6 to 8, both inclusive, on page 3, and insert in lieu thereof the following:

B[1]. "Figure 1 is a section of the burner end of the torch, upon the line K-L of figure 2, parts appearing in elevation;

Figure 1[a] is a sectional elevation of the handle end of the torch, figures 1 and 1[a] being complemental, and showing the burner and handle portions of the torch in operative relation to each other;

Figure 2 is a top plan of that portion of the torch which appears in figure 1, parts, however, being broken away."

[Matter enclosed between rules erased in copy.]

It is thought that the Examiner's objection to the matter amended into line 11 of page 4, should be withdrawn. The tube 9 is "lined" with wire gauze. If the Examiner will note the drawing, he will observe that the reference character 10 is applied to both the ends and [fol. 635] the side of the tube 9. Morever, the wire gauze is clearly indicated in figure 1 (now figure 1[a]) as extending along the sides of the tube.

The Examiner will cancel the sketch submitted for amendment of figure 1.

Permission is requested to amend figure 1 as shown in the appended sketch. This sketch represents the section taken strictly on

the line K-L of figure 2. This section is in accordance with the Examiner's suggestion, as evidenced in an interview had on or about the 19th day of August 1911.

Reference character 100 has been placed upon the drawing.

Strike out the last five lines of page 9, together with all amendments relating thereto, and insert in lieu thereof the following:

B². In the modified form appearing in figure 9, the nozzle 35′ exercises the same functions as the nozzle 35 in figure 1. The nozzle 35′ is equipped with an axial bore 42′, corresponding to the bore 42 of the nozzle 35 in figure 1. About the bore 42′ there are a series of supplemental bores 46. All of the bores 46 and 42′ are for a single purpose, to-wit, to serve as conduits for mixed oxygen and gas, this mixture of oxygen and gas passing, in figure 1, through the bore 42 alone.

[Matter enclosed between rules erased in copy.]

With regard to the use of the word "burner" in claim 1, the attention of the Examiner is respectfully directed to the sentence beginning in line 8 of page 9.

[fol. 636] Cancel claim 2.

Insert the following as a new sentence after "19" in the next to to the last line on page 4.

B³. "The member 1, the pipes 17, 7 and 8, and the head 19, are all rigidly connected. Therefore, these elements may be referred to under the general name of a "handle", although the element 1 is primarily adapted for that purpose."

[Matter enclosed between rules erased in copy.]

The foregoing insertion will probably remove the Examiner's contention that the applicant fails to disclose a handle upon which the body is pivotally mounted.

In the third line from the end of claim 3, strike out "independently".

If the above amendment to claim 3 does not remove the Examiner's objection to the claiming of means for conveying a fluid etc., a more detailed criticism of claim 3 will be helpful.

With regard to claim 4, it is thought that the handle portion of the structure is now defined with sufficient clearness in the descriptive portion of the specification.

Claim 4, line 4, from the end after "tube," insert

B⁴. "the body and the handle having mating curved grooves whereby".

[Matter enclosed between rules erased in copy.]

Fig. 1

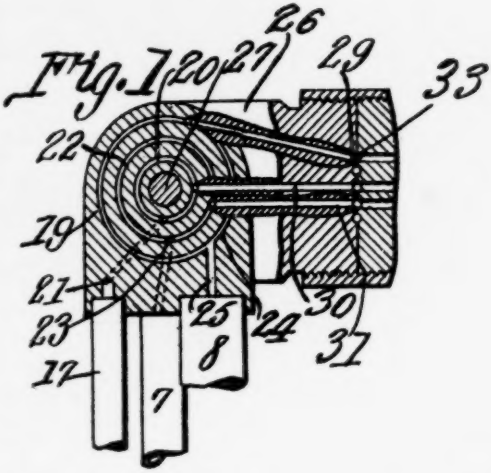
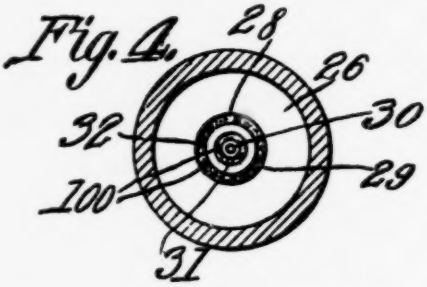


Fig. 4.



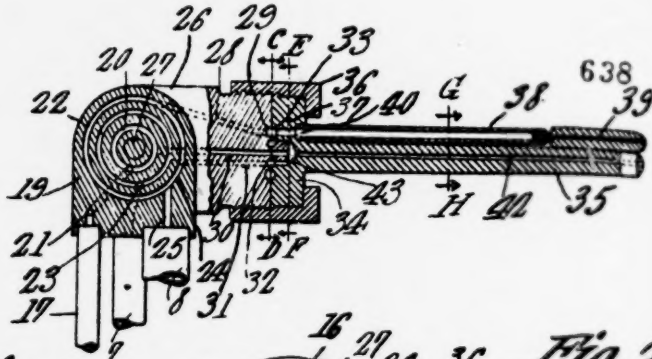


Fig. 1.

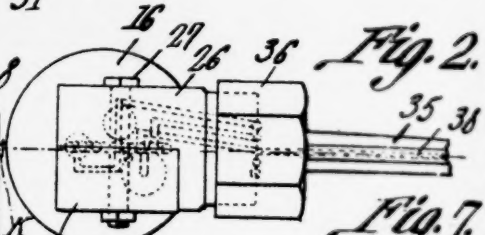


Fig. 2.

Fig. 7.

Fig. 4.

Fig. 5.

Fig. 2.

Fig. 3.

Fig. 6.

Fig. 8.

Witnesses

J. Crowell

S. H. Wilcox

Harlon A. Clifford,
Inventor

by C. A. Snow & Co.
Attorneys

Claim 4, line 3 from the end strike out "having" and insert *"will have"*.

Claim 5, line 2; claim 5, line 4, (both occurrences) claim 5, last line, after the word "nozzle" insert *"structure"*.

[fol. 637] Claim 5, next to the last line, strike out "in" and insert *"for."*

Claim 5, as above amended, appears to follow the phraseology of page 6, lines 21 and 22, as amended heretofore.

Claims 7 and 8, in line 3 of each claim, *"and"* should be inserted after the semi-colon.

In line 5, of claims 7 and 8, strike out "outer" and insert *"side"*.

Claim 8, line 5, strike out "inwardly".

With regard to the rejection of claims 9 and 10, attention is again directed respectfully to the sentence beginning in line 8 of page 9.

An early and favorable action is solicited.

Respectfully, C. A. Snow & Co.

(Here follow drawings marked side folio pages 637a and 638.)

[fol. 639] Application Room,
Oct. 4, 1911,
U. S. Patent Office.

Oct. 5, 1911,
Division XXX.

C.

Paper No. 6

Room 152

ML/BAS.

Harlon A. Clifford. Torch. Filed Jan. 31, 1911. Serial No. 605,741.

The Commissioner of Patents.

SIR: This case, upon the 20th day of Sept. 1911 was discussed with the Assistant in charge, and with the Principal Examiner. It was pointed out to the applicant's representative that, although there was at that time no serious objection to the subject-matter of the claims, the claims, nevertheless, were subject to adverse criticism because the terms used therein were in some instances, questionably supported by the description, the description in its turn, being somewhat involved in its phraseology.

At the suggestion of the Principal Examiner, the applicant desires to cancel pages 2 to 9, both inclusive, of the specification, the clause introductory to the claims, all of the claims, and all amendments to the specification and the claims, and to substitute in lieu thereof the new specification below.

Leave is asked to show a packing 15 in the part 14 of the pipe 7 in Figure 3, as per appended sketch. See line 17 and following of page 4 of the original specification.

[fol. 640] For the Examiner's convenience, a comparative table of the claims is given.

New specification.	Original specification.	Amendment A.
1	1	..
2	3	..
3	4	..
4	5	..
5	6	..
6	7	..
7	8	..
8	9	..
9	..	10
10 (New)	..	..
11 (New)	..	..

Substitute Specification and Claims

C[1]. The device forming the subject matter of this application is a torch adapted to be employed for applying a mixture of oxygen and gaseous fuel to a material, for the purpose of welding and for cutting the same.

The invention aims to provide a torch of this character in which the angle between the burner and the handle may be changed without interfering with the flow of fluid through the handle and to the burner. A further object of the in- [fol. 641] vention is to provide novel means for securing a thorough mixture of gaseous fuel and oxygen in the mixing chamber of the burner. The invention is designed, moreover, to provide a torch having separable cutting and welding elements, each provided with an individual fluid supply. Another object of the invention is to provide means for preventing a flash-back of the ignited fluids. Novel means are supplied for assembling the various elements of the torch in operative relation to one another.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—

Figure 1 is a section of the burner, the burner-support and a portion of the handle, upon the line K-L of Figure 2, parts appearing in elevation;

Figure 1[a] is a sectional elevation of a portion of the handle, figures 1 and 1[a] being complemental and showing the handle and the burner of the torch rectangularly disposed;

Figure 2 is a top plan showing a portion of the burner, the burner-support, and that portion of the handle to which the burner-support is immediately pivoted;

[fol. 642] Figure 3 is a transverse section through the casing portion of the handle, upon the line A-B of Figure 1*;

Figures 4 and 5 are sections upon the line C-D of Figure 1, looking to the left in Figure 4 and to the right in Fige 5;

Per D. Figure 6 is a section on the line [D-F]* E-F of Figure 1;

Figure 7 is a section on the line G-H of Figure 1;

" " Figure 8 is a detail perspective view of the plug which is inserted into the mixing chamber of the burner for the purpose of securing a thorough mixture of gaseous fuel and oxygen; and

Figure 9 is a section through a modified form of primary nozzle, the cutting plane passing through such modified structure in approximately the same place as that in which the plane G-H passes through the structure shown in Figure 1.

[fol. 643] The torch herein disclosed comprises three fundamental parts; a handle, a burner-support and a burner. The handle and the burner-support are pivotally united so that the angular relation between them may be altered; and the burner is detachably secured to the burner-support. These fundamental parts will be described in order.

The Handle.—The handle is a composite structure and includes a tubular casing 1, provided at one end with a base 2, and at the other end with a cap 16. Located within the casing 1 is a tube 9 of less diameter than the casing. The tube 9 extends from the base 2 to the cap 16, the ends of the tube being supplied with wire gauze closures

Per D. 10, retaining in place within the tube[,]* a packing 11 of asbestos or the like. A gas supply pipe 6, controlled by a valve 3, enters the base 2 and communicates with the interior of the tube 9. Oxygen pipes 7 and 8 enter the base 2, the pipe 7 being controlled by a valve 4 and the pipe 8 being controlled by a valve 5. As shown at 12 the pipe 8 passes through the casing 1 and out of the pipe 8

Per D. cap 16, the [portion 12]* entering a head 19, constituting a part of the handle of the torch. The pipe 7, as shown at 14, passes through the casing 1 and enters the head 19. Communication is established between the tube 9 and the head 19 by means of a pipe 17, united with the cap 16 by a connection 18. The parts 12 and 14

[*Words and figures enclosed in brackets erased in copy.]

of the pipes 8 and 7 respectively, are packed with asbestos, as shown at 15. The packings 11 and 15 serve to prevent a [fol. 644] flash-back of the ignited fluids which the pipes 6, 7 and 8 conduct.

In one of the side faces of the head 19 there are concentric annular grooves 20, 22 and 24. A duct 21 in the head 19 serves to establish communication between the pipe 17 and the groove 20, another duct 23 connecting the pipe 7 with the groove 22, and a third duct 25 connecting the pipe 8 with the groove 24.

The Burner-Support.—The burner-support 26 is shown in the form of a block adapted to fit closely against the grooved face of the head portion 19 of the handle. In the face of the burner-support 26 there are concentric annular grooves, registering respectively with the grooves 20, 22 and 24 of the head 19. A pivot element 27 connects the burner-support 26 with the head portion 19 of the handle, so that the burner-support and the handle may assume different relative angles. Owing to the fact that the grooves 20, 22 and 24 of the head are concentric with the corresponding grooves in the burner-support, the fluid conduits through the handle and the burner-support will remain continuous when the burner-support is swung about upon its pivotal connection 27 with the head 19.

In the outer end face of the burner-support 26 there is an annular groove 29 concentric with another annular groove 32, of smaller diameter than the groove 29. A passage 28 in the burner-support 26 serves to establish communication between the groove 29 upon the one hand, and the groove 24 in the head 19 and the registering groove in the burner-support 26 upon the other hand. A passage 31 in the burner-support 26 serves to establish communication between the groove 32 upon the one hand, and the groove 22 in the head 19 and the registering groove in the burner-support 26 upon the other hand. There is a third passage 30 in the burner-support 26, this passage opening at one end into the groove 20 in the head 19 and into the registering groove in the burner-support 26, and at the other end opening through the end wall of the burner-support at the center of the grooves 29 and 32.

[fol. 645] The Burner.—The burner includes a primary nozzle 35 having at one end a lateral flange 34 abutting against the end wall of the burner-support 26. The primary nozzle 35 is removably held upon the burner-support 26 by a collar 36, overlapping the outer face of the flange 34 and threaded upon the burner-support 26. The bore 42 of the primary nozzle 35 is enlarged within the flange 34 of the primary nozzle to form a mixing chamber 43. In the mixing chamber 43 is located a plug 40 having an axial passage 41 communicating at one end with the forward portion of the

mixing chamber 43, and at the other end communicating with the passage 30 in the burner-support 26. In the side wall of the plug 40 there are diagonal grooves 44 communicating at their rear ends with the annular groove 32 in the outer end face of the burner-support 26, and at their forward ends opening into the forward portion of the mixing chamber 43, these grooves 44 being extended across the outer end face of the plug 40, as shown at 45.

The burner further includes a secondary nozzle, comprising a tube 38 seated in a longitudinal groove 47 in the side face of the primary nozzle 35, the tube 38 being removably connected with the flange 34 of the primary nozzle 35. The tube 38 of the secondary nozzle carries a removable cutting tip 39, having a reduced bore communicating with the bore of the tube 38. The bore of the tube 38 opens into a passage 37 through the flange 34 of the primary nozzle 35, the passage 37 opening into an annular groove 33 in the rear face of the flange 34, the groove 33 registering with the groove [fol. 646] 29 in the outer end face of the burner-support 26. The registering grooves 29 and 33, and the groove 32, may contain a packing 100 of asbestos and metallic gauze, for the purpose of preventing a flash-back of the ignited fluids.

Operation.—Presupposing that the controlling valves 3, 4 and 5 are open, the gas which is to be burned will enter the pipe 6 and pass thence through the tube 9 to the pipe 17 and by way of the duct 21 into the annular groove 20, and by way of the passage 30 in the burner-support 26, to the central passage 41 in the plug 40, and into the mixing chamber 43 in front of the plug 40. From the mixing chamber 43, the gas will pass through the bore 42 of the primary nozzle 35, to the extremity of the primary nozzle, at which point the gas will be ignited.

The oxygen entering the pipe 7, will pass through the casing 1 and traverse the duct 23 to enter the groove 22. From the groove 22 the oxygen will traverse the passage 31 and enter the groove 32, passing thence by way of the inclined grooves 44 in the side face of the plug 40 into the mixing chamber 43, and thence with the gas which is simultaneously delivered into the mixing chamber, through the bore 42 of the primary nozzle 35.

Owing to the positions of the grooves 44 in the side walls of the plug 40 and owing to the fact that these grooves extend across the end face of the plug as shown at 45, the oxygen will be given a spiral motion as it enters the mixing [fol. 647] chamber 43, a thorough admixture of gas and oxygen being thereby effected.

The path traversed by the oxygen supplied to the cutting tip 39 is as follows; the pipe 8, the duct 25, the annular groove 24 in the head 19 and its fellow in the burner-support 26, the passage 28, the registering annular grooves 29 and 33

in the burner-support 26 and in the flange 34 of the primary nozzle 35 respectively, the passage 37 through the flange 34, the bore of the tube 38 of the secondary nozzle, and out through the bore of the cutting tip 39 of the secondary nozzle.

When the torch is to be used for welding, the secondary nozzle 38-39 may be removed, the valve 5 being closed. When the troch is to be used for cutting purposes, the secondary nozzle 38-39 will remain in place as shown in Figure 1. The longitudinal grooving of the primary nozzle 35 at 47 to receive the tube 38 of the secondary nozzle, serves to hold the ignition ends of the two nozzle portions of the burner assembled for operation upon the material.

Modification.—In the modified form shown in Figure 9, the primary nozzle 35′ alone is changed, the nozzle 35′ having the same functions as the primary nozzle 35 of Figure 1. The nozzle 35′ is equipped with an axial bore 42′, corresponding to the bore 42 of the nozzle 35. About the bore 42′ are disposed supplemental bores 46. All of the bores 42′ and 46 are for a single purpose, to wit, to serve as conduits which carry a mix-[fol. 648] ture of gas and oxygen from the mixing chamber 43 to the outer end of the primary nozzle 35′, this mixture of gas and oxygen passing, in the structure shown in Figure 1, through the single bore 42 of the primary nozzle 35

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:

1. In a device of the class described, a handle including a head having annular grooves in one of its faces, and pipes connected with the head, each pipe communicating with a groove to form oxygen and gas conduits; a burner support having annular grooves in one of its faces, registering with the grooves of the head; means for binding the head and the burner-support together for relative angular movement and to hold the grooves of the head and of the burner-support in registration; and a burner carried by the burner-support, the burner having separate bores, each bore communicating with a registering pair of the grooves.

[fol. 649] 2. In a device of the class described, a burner-support; a burner including a primary nozzle and a secondary nozzle removably secured to the primary nozzle; means for removably securing the burner to the burner-support; a handle with which the burner-support is pivotally connected; and means for conveying fluid through the handle to the nozzles, irrespective of the relative positions of the burner-support and the handle.

3. In a device of the class described, a burner-support; a burner removably secured thereto, the burner including a primary nozzle and a secondary nozzle removably secured to the primary nozzle, the secondary nozzle including a removable tip; a handle pivotally connected with the burner-sup-

port, there being separate fluid conduits and an independent conduit, all leading through the handle and through the burner-support, the separate conduits communicating with the primary nozzle and the independent conduit-communicating with the secondary nozzle, there being registering annular grooves in the burner-support and in the handle, constituting parts of the conduits, whereby the continuity of the conduits will be maintained, irrespective of the relative positions of the handle and the burner-support.

Per D.

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4. In a device of the class described, a burner-support; a burner including a primary nozzle abutting against the burner-support and a secondary nozzle removably connected [fol. 650] with the primary nozzle, the secondary nozzle including a removable tip; a collar removably connected with the burner-support and engaging the primary nozzle; and means for supplying fluid to both nozzles.

[Matter enclosed between rules erased in copy.]

4[a] [5].* In a device of the class described, a burner including a primary nozzle having a lateral flange and a longitudinal groove, and a secondary nozzle fitting in the groove and removably engaged with the flange, the secondary nozzle including a removable tip; a burner-support; means for securing the flange to the burner-support; and independent conduits in the burner-support, each of which communicates with the bore of one nozzle.

Per D

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6. In a device of the class described, a nozzle provided with a bore enlarged at one end to form a mixing chamber; a plug removably mounted in the chamber and provided with diagonal grooves in its side face, communicating with the mixing chamber, the plug having a longitudinal opening communicating with the mixing chamber.

[Matter enclosed between rules erased in copy.]

5[a] [7].* In a device of the class described, a nozzle provided with a bore terminally enlarged to form a mixing chamber; a plug removably seated in the mixing chamber and having diagonally disposed grooves

and

Per D.

[*Words and figures enclosed in brackets erased in copy.]

in its side face, extended upon the end face of the plug within the mixing chamber, there being an opening in the interior of the plug, communicating with the mixing chamber.

[fol. 651] 6d [8].* In a device of the class described, a burner-support and a burner disposed in terminal abutment, there being registering annular grooves in the meeting faces of the burner-support and the burner; a packing in the grooves; means for supplying fluid to the grooves on one side of the packing; and means for establishing communication between the bore of the burner and the grooves upon the other side of the packing.

7d [9].* In a device of the class described, a burner-support and a handle having registering annular grooves in their faces; means for binding the burner-support and the handle together for relative angular movement, and for holding said faces in intimate contact, to maintain the grooves in registration; a burner carried by the burner-support, the burner and the burner-support having communications with the grooves; the handle including means for supplying fluid to the grooves.

and

Per D.

Per D

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10. In a device of the class described, a burner-support; a burner carried thereby and including a primary welding nozzle and a secondary cutting nozzle, the cutting nozzle being removable; means for supplying fluid to the primary nozzle; means for supplying fluid to the secondary nozzle; and means for cutting off the supply of the secondary nozzle.

11. In a device of the class described, a handle and a burner-support, one of which is provided with an annular [fol. 652] groove, the other of which is provided with a passage opening into the groove; a burner carried by the burner-support and having communication with the groove and the passage; means for pivotally connecting the burner-support and the handle, whereby the passage will remain in communication with the groove when the relative positions of the burner-support and the handle are changed.

[Matter enclosed between rules erased in copy.]

All of which is respectfully submitted.

C. A. Snow & Co.

(Here follows drawing marked side folio page 652a)

[*Words and figures enclosed in brackets erased in copy.]

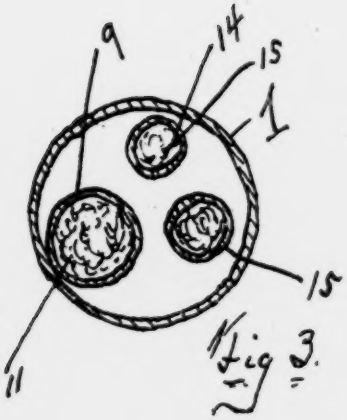


Fig 3.

48

652 a

[fol. 653] Patent Office,
Oct. 20, 1911,
Mailed.

2—260

Div. 30, Room 152

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.
A. M. F.

Paper No. 7

All communications respecting this application should give the serial number, date of filing, title of invention and name of the applicant.

Department of the Interior,
United States Patent Office,
Washington, October 20, 1911.

Harlon A. Clifford,
C/o C. A. Snow & Co.,
Washington, D. C.:

Please find below a communication from the examiner in charge of your application. Serial No. 605,741, Torch, filed Jan. 31, 1911.
E. B. Moore, Commissioner of Patents.

In response to amendments filed Sept. 11 and Oct. 4, 1911.
The objection to the drawing is repeated. The drawing has not been corrected.
Permission to show packing in pipe 14 is granted.
Page 5 of the substitute specification, line 6, "D–F" should be —E–F—. Line 8, —view— should be inserted after "perspective."
Page 6, lines 13 and 14 do not make sense. Line 20 does not agree with the drawing which shows pipe 8 "entering a head 19".
Claims 1, 2 and 3 appear allowable.
Claim 4 is rejected on patent to Johnson, 969,875, of record.
Claim 5 appears allowable.
Claim 6 is rejected on English patent to Mangiameli, et al., 13,272 of 1908, 158-109.
Clam 7 is objectionable. The word —and— should be inserted in line 3, after the semicolon. The subject matter of claim 7 appears allowable.
Claim 8 appears allowable.
Claim 9 is objectionable. The word —and— should be inserted [fol. 654] in line 6, after the semicolon. The subject matter of claim 9 appears allowable.
Claim 10 is rejected on patent to Delcampe, 894,195, July 28, 1908, 158-109, X-ref.
Claim 11 is rejected on patent to Bruckner, 935,458, Sept. 28, 1909, 158-109.

M. R. Sullivan, Examiner. C. J. S.

Application Room,
Nov. 28, 1911,
U. S. Patent Office.

D. Paper No. 8

Paper No. 8

Nov. 29, 1911, Division XXX, Room 152

ML/BAS.

Harlon A. Clifford. Torch. Filed Jan. 31, 1911. Serial No. 605,741

The Commissioner of Patents.

SIR: Office action of Oct. 20, 1911 at hand and contents noted.

Applicant's attorneys have directed their draftsman to correct the drawings.

Page 5, line 6, cancel "D-F" and insert "*E-F*". Line 8, after "perspective" insert "*view*."

Page 6, line 13, cancel the comma after "tube." Line 20, cancel "portion 12" and insert "*pipe* 8."

Claim 7, line 3, before "a" insert "*and*."

Claim 9, line 6, before "a" insert "*and*."

Cancel claims 4, 6, 10 and 11, and renumber.

The case appears to be in condition to be passed out.

Respectfully submitted, C. A. Snow & Co.

[fol. 655] 2—603

Letter No. —.

Serial No. 605,741

Address only the Commissioner of Patents, Washington, D. C.
K. O'D.

Department of the Interior,
United States Patent Office,
Washington, Dec. 12, 1911.

Harlon A. Clifford, c/o C. A. Snow & Co., Washington, D. C.

SIR: Your application for a patent for an improvement in torch, filed Jan. 31, 1911, has been examined and allowed.

The final fee, twenty dollars, must be paid not later than six months from the date of this present notice of allowance. If the final fee be not paid within that period the patent on this application will be withheld, unless renewed with an additional fee of $15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and

sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send distinctly and plainly written, the name of the inventor and title of invention as above given, date of allowance (which is the date of this circular), date of filing, and, if assigned, the names of the assignees.

If you desire to have the patent issue to assignees, an assignment containing a request to that effect, together with the fee for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of five cents each. The money should accompany the order. Postage stamps will not be received.

Final fees will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully, E. B. Moore, Commissioner of Patents.

[On left margin:] In remitting the final fee give the serial number at the head of this notice.

[On right margin:] Uncertified checks will not be accepted.

[fol. 656] $20 Received Jan. 10, 1912. C. Chief Clerk, U. S. Patent Office

2—327

Memorandum of Fee Paid at United States Patent Office

(Be careful to give correct Serial No.)

Serial No. 605,741, —— —, 1900.
Inventor: Harlon A. Clifford.
Patent to be issued to inventor.
Name of invention, as allowed: Torch.
Date of payment: Jan. 10, 1912.
Fee: $20.
Date of filing: Jan. 31, 1911.
Date of circular of allowance: Dec. 12, 1911.

The Commissioner of Patents will please apply the accompanying fee as indicated above.

C. A. Snow & Co., Attorneys.

Send patent to Harlon A. Clifford, 4 Olive St., Greenfield, Mass.

[fol. 657] 2—191

Serial No. 605,741

Address only "The Commissioner of Patents, Washington, D. C." Patent will issue Feb. 6. 1912.

Harlon A. Clifford, c/o C. A. Snow, Wash., D. C.

SIR: You are informed that the final fee of twenty dollars has been received in your application for Improvement in torch: date of receipt, Jan. 10, 1912.

Very respectfully, E. B. Moore, Commissioner of Patents.

1911

Contents

Print, Jan. 31, 1911.

1. Application, 1 paper[s].*
2. Rejection, Mar. 8, 1911.
3. Amendment A, Jun. 12, 1911.
4. Rejection, Jun. 22, 1911.
5. Amendment B, Sep. 11, 1911.
6. Amendment C, Oct. 4, 1911.
7. Rejection, Oct. 20, 1911.
8. Amendment D, Nov. 28, 1911.

(Here follow side folio pages 658, 659, 660, and 661; side folio pages 662 to 750, inclusive, omitted in printing)

[fol. 751] IN UNITED STATES DISTRICT COURT

[Title omitted]

OPINION, LEARNED HAND, D. J.—Jan. 8, 1924

On final hearing of the usual bill in equity for infringement of patents, 874,666; 1,028,410; and 880,099. All these patents relate to the art of oxy-acetylene torches; the first two for cutting metals, the second for welding. The first provided for bringing the two gases in a mixture to the work in a circle or arc of pencil-like flames. In the centre was the oxygen flame which burns the superheated metal and thus produces the cut. The patent pre-supposed the general art and was limited to the form of tip disclosed.

The second patent was for a supporting head in such a torch into which could be inserted interchangeable unitary tips. In the progress of such work, it is often desirable to change the proportions of the mixture and the relation of mixture to cutting jet. This can [fol. 752] be done by changes in the size of the bores or ducts in the tip. The patent is for such tips in combination with a single head.

The third patent is for a welding torch, that is, one in which the cutting jet is absent. It bore a similar relation of the welding art that the second patent bore to the cutting art. That is, it provided for an interchangeable tip in which the gases might be mixed, the mixture dependent upon the calibre of the ducts.

Dean S. Edmonds, for the plaintiff.
James A. Watson, for the defendant.

[*Words and figures enclosed in brackets erased in copy.]

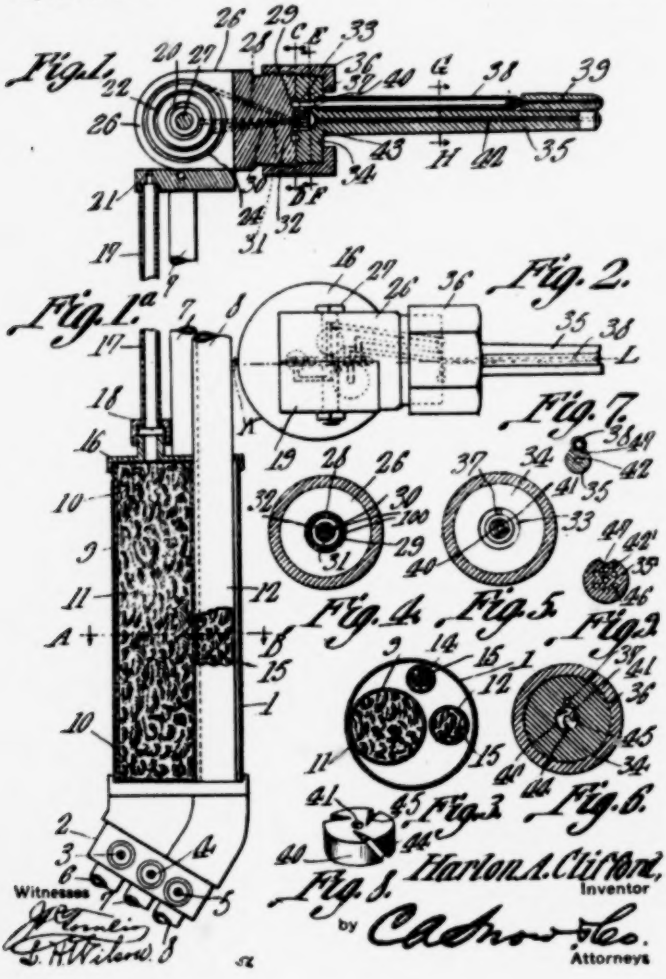
H. A. CLIFFORD.

TORCH.

APPLICATION FILED JAN. 31, 1911.

1,016,613.

Patented Feb. 6, 1912.



UNITED STATES PATENT OFFICE.

HARLOW A. CLIFFORD, OF JERSEY CITY, NEW JERSEY.

TORCH.

1,016,613. Specification of Letters Patent. Patented Feb. 6, 1912.

Application filed January 21, 1911. Serial No. 603,741.

To all whom it may concern:

Be it known that I, HARLOW A. CLIFFORD, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Torch, of which the following is a specification.

The device forming the subject matter of this application is a torch adapted to be employed for applying a mixture of oxygen and gaseous fuel to a material, for the purpose of welding and for cutting the same.

The invention aims to provide a torch of this character in which the angle between the burner and the handle may be changed without interfering with the flow of fluid through the handle and to the burner.

A further object of the invention is to provide novel means for securing a thorough mixture of gaseous fuel and oxygen in the mixing chamber of the burner.

The invention is designed, moreover, to provide a torch having separable cutting and welding elements, each provided with an individual fluid supply.

Another object of the invention is to provide means for preventing a flash-back of the ignited fluids.

Novel means are supplied for assembling the various elements of the torch in operative relation to one another.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 is a section of the burner, the burner-support and a portion of the handle, upon the line K—L of Fig. 2, parts appearing in elevation; Fig. 1ª is a sectional elevation of a portion of the handle, Figs. 1 and 1ª being complemental and showing the handle and the burner of the torch rectangularly disposed; Fig. 2 is a top plan showing a portion of the burner, the burner-support, and that portion of the handle to which the burner-support is immediately pivoted; Fig. 3 is a transverse section through the casing portion of the handle, upon the line A—B of Fig. 1ª; Figs. 4 and 5 are sections upon the line C—D of Fig. 1, looking to the left in Fig. 4 and to the right in Fig. 5; Fig. 6 is a section on the line E—F of Fig. 1; Fig. 7 is a section on the line G—H of Fig. 1; Fig. 8 is a detail perspective view of the plug which is inserted into the mixing chamber of the burner for the purpose of securing a thorough mixture of gaseous fuel and oxygen; and Fig. 9 is a section through a modified form of primary nozzle, the cutting plane passing through such modified structure in approximately the same place as that in which the plane G—H passes through the structure shown in Fig. 1.

The torch herein disclosed comprises three fundamental parts; a handle, a burner-support and a burner. The handle and the burner-support are pivotally united so that the angular relation between them may be altered; and the burner is detachably secured to the burner-support. These fundamental parts will be described in order.

The handle.—The handle is a composite structure and includes a tubular casing 1, provided at one end with a base 2, and at the other end with a cap 16. Located within the casing 1 is a tube 9 of less diameter than the casing. The tube 9 extends from the base 2 to the cap 16, the ends of the tube being supplied with wire gauze closures 10, retaining in place within the tube a packing 11 of asbestos or the like. A gas supply pipe 6, controlled by a valve 3, enters the base 2 and communicates with the interior of the tube 9. Oxygen pipes 7 and 8 enter the base 2, the pipe 7 being controlled by a valve 4 and the pipe 8 being controlled by a valve 5. As shown at 12 the pipe 8 passes through the casing 1 and out of the cap 16, the pipe 8 entering a head 19, constituting a part of the handle of the torch. The pipe 7, as shown at 14, passes through the casing 1 and enters the head 19. Communication is established between the tube 9 and the head 19 by means of a pipe 17, united with the cap 16 by a connection 18. The parts 12 and 14 of the pipes 8 and 7 respectively, are packed with asbestos, as shown at 15. The packings 11 and 15 serve to prevent a flash-back of the ignited fluids which the pipes 6, 7 and 8 conduct. In one of the side faces of the head 19 there are concentric annular grooves 20, 22 and 24. A duct 21 in the head 19 serves to establish communication between the pipe 17 and the

groove 20, another duct 23 connecting the pipe 7 with the groove 22, and a third duct 25 connecting the pipe 8 with the groove 24.

The burner-support.—The burner-support 26 is shown in the form of a block adapted to fit closely against the grooved face of the head portion 19 of the handle. In the face of the burner-support 26 there are concentric annular grooves, registering respectively with the grooves 20, 22 and 24 of the head 19. A pivot element 27 connects the burner-support 26 with the head portion 19 of the handle, so that the burner-support and the handle may assume different relative angles. Owing to the fact that the grooves 20, 22 and 24 of the head are concentric with the corresponding grooves in the burner-support, the fluid conduits through the handle and the burner-support will remain continuous when the burner-support is swung about upon its pivotal connection 27 with the head 19.

In the outer end face of the burner-support 26 there is an annular groove 29 concentric with another annular groove 32, of smaller diameter than the groove 29. A passage 28 in the burner-support 26 serves to establish communication between the groove 29 upon the one hand, and the groove 24 in the head 19 and the registering groove in the burner-support 26 upon the other hand. A passage 31 in the burner-support 26 serves to establish communication between the groove 32 upon the one hand, and the groove 22 in the head 19 and the registering groove in the burner-support 26 upon the other hand. There is a third passage 30 in the burner-support 26, this passage opening at one end into the groove 20 in the head 19 and into the registering groove in the burner-support 26, and at the other end opening through the end wall of the burner-support at the center of the grooves 29 and 32.

The burner.—The burner includes a primary nozzle 35 having at one end a lateral flange 34 abutting against the end wall of the burner-support 26. The primary nozzle 35 is removably held upon the burner-support 26 by a collar 36, overlapping the outer face of the flange 34 and threaded upon the burner-support 26. The bore 42 of the primary nozzle 35 is enlarged within the flange 34 of the primary nozzle to form a mixing chamber 43. In the mixing chamber 43 is located a plug 40 having an axial passage 41 communicating at one end with the forward portion of the mixing chamber 43, and at the other end communicating with the passage 30 in the burner-support 26. In the side wall of the plug 40 there are diagonal grooves 44 communicating at their rear ends with the annular groove 32 in the outer end face of the burner-support 26, and at their forward ends opening into the forward portion of the mixing chamber 43, these grooves 44 being extended across the outer end face of the plug 40, as shown at 45. The burner further includes a secondary nozzle, comprising a tube 38 seated in a longitudinal groove 47 in the side face of the primary nozzle 35, the tube 38 being removably connected with the flange 34 of the primary nozzle 35. The tube 38 of the secondary nozzle carries a removable cutting tip 39, having a reduced bore communicating with the bore of the tube 38. The bore of the tube 38 opens into a passage 37 through the flange 34 of the primary nozzle 35, the passage 37 opening into an annular groove 33 in the rear face of the flange 34, the groove 33 registering with the groove 29 in the outer end face of the burner-support 26. The registering grooves 29 and 33, and the groove 32, may contain a packing 100 of asbestos and metallic gauze, for the purpose of preventing a flash-back of the ignited fluids.

Operation.—Presupposing that the controlling valves 3, 4 and 5 are open, the gas which is to be burned will enter the pipe 6 and pass thence through the tube 9 to the pipe 17 and by way of the duct 21 into the annular groove 20, and by way of the passage 30 in the burner-support 26, to the central passage 41 in the plug 40, and into the mixing chamber 43 in front of the plug 40. From the mixing chamber 43, the gas will pass through the bore 42 of the primary nozzle 35, to the extremity of the primary nozzle, at which point the gas will be ignited. The oxygen entering the pipe 7, will pass through the casing 1 and traverse the duct 23 to enter the groove 22. From the groove 22 the oxygen will traverse the passage 31 and enter the groove 32, passing thence by way of the inclined grooves 44 in the side face of the plug 40 into the mixing chamber 43, and thence with the gas which is simultaneously delivered into the mixing chamber, through the bore 42 of the primary nozzle 35. Owing to the positions of the grooves 44 in the side walls of the plug 40 and owing to the fact that these grooves extend across the end face of the plug as shown at 45, the oxygen will be given a spiral motion as it enters the mixing chamber 43, a thorough admixture of gas and oxygen being thereby effected. The path traversed by the oxygen supplied to the cutting tip 39 is as follows; the pipe 8, the duct 25, the annular groove 24 in the head 19 and its fellow in the burner-support 26, the passage 28, the registering annular grooves 29 and 33 in the burner-support 26 and in the flange 34 of the primary nozzle 35 respectively, the passage 37 through the flange 34, the bore of the tube 38 of the secondary nozzle, and out through the bore of the cutting tip 39 of the secondary nozzle.

When the torch is to be used for welding, the secondary nozzle 38—39 may be removed, the valve 5 being closed. When the torch is to be used for cutting purposes, the secondary nozzle 38—39 will remain in place as shown in Fig. 1. The longitudinal grooving of the primary nozzle 35 at 47 to receive the tube 38 of the secondary nozzle, serves to hold the ignition ends of the two nozzle portions of the burner assembled for operation upon the material.

Modification.—In the modified form shown in Fig. 9, the primary nozzle 35′ alone is changed, the nozzle 35′ having the same functions as the primary nozzle 35 of Fig. 1. The nozzle 35′ is equipped with an axial bore 42′, corresponding to the bore 42 of the nozzle 35. About the bore 42′ are disposed supplemental bores 46. All of the bores 42′ and 46 are for a single purpose, to wit, to serve as conduits which carry a mixture of gas and oxygen from the mixing chamber 43 to the outer end of the primary nozzle 35′, this mixture of gas and oxygen passing, in the structure shown in Fig. 1, through the single bore 42 of the primary nozzle 35.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:

1. In a device of the class described, a handle including a head having annular grooves in one of its faces, and pipes connected with the head, each pipe communicating with a groove to form oxygen and gas conduits; a burner support having annular grooves in one of its faces, registering with the grooves of the head; means for binding the head and the burner-support together for relative angular movement and to hold the grooves of the head and of the burner-support in registration; and a burner carried by the burner-support, the burner having separate bores, each bore communicating with a registering pair of the grooves.

2. In a device of the class described, a burner-support; a burner including a primary nozzle and a secondary nozzle removably secured to the primary nozzle; means for removably securing the burner to the burner-support; a handle with which the burner-support is pivotally connected; and means for conveying fluid through the handle to the nozzles, irrespective of the relative positions of the burner-support and the handle.

3. In a device of the class described, a burner-support; a burner removably secured thereto, the burner including a primary nozzle and a secondary nozzle removably secured to the primary nozzle, the secondary nozzle including a removable tip; a handle pivotally connected with the burner-support, there being separate fluid conduits and an independent conduit, all leading through the handle and through the burner-support, the separate conduits communicating with the primary nozzle and the independent conduit communicating with the secondary nozzle, there being registering annular grooves in the burner-support and in the handle, constituting parts of the conduits, whereby the continuity of the conduits will be maintained, irrespective of the relative positions of the handle and the burner-support.

4. In a device of the class described, a burner including a primary nozzle having a lateral flange and a longitudinal groove, and a secondary nozzle fitting in the groove and removably engaged with the flange, the secondary nozzle including a removable tip; a burner-support; means for securing the flange to the burner-support; and independent conduits in the burner-support, each of which communicates with the bore of one nozzle.

5. In a device of the class described, a nozzle provided with a bore terminally enlarged to form a mixing chamber; and a plug removably seated in the mixing chamber and having diagonally disposed grooves in its side face, extended upon the end face of the plug within the mixing chamber, there being an opening in the interior of the plug, communicating with the mixing chamber.

6. In a device of the class described, a burner-support and a burner disposed in terminal abutment, there being registering annular grooves in the meeting faces of the burner-support and the burner; a packing in the grooves; means for supplying fluid to the grooves on one side of the packing; and means for establishing communication between the bore of the burner and the grooves upon the other side of the packing.

7. In a device of the class described, a burner-support and a handle having registering annular grooves in their faces; means for binding the burner-support and the handle together for relative angular movement, and for holding said faces in intimate contact, to maintain the grooves in registration; and a burner carried by the burner-support, the burner and the burner-support having communications with the grooves; the handle including means for supplying fluid to the grooves.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HARLON A. CLIFFORD.

Witnesses:
DELAVAN PROVOST,
LEO C. CLIFFORD.

Patent 874,666

LEARNED HAND, D. J.:

This patent was applied for on April 5, 1907, when the art was in its infancy. It is reasonably clear that the patentees at the time did not recognize the full value of their invention but the fact remains, whether they did or not, that they happened upon a device which became the accepted form, which has displaced all others, and which seems likely to be the final tool by which metals will be cut under this process. As such the patent is entitled to much favor from a court, especially as it appears that for nearly its whole life it has secured the substantial acquiescence of the trade. The nature of the attack upon it confirms the impression which these considerations suggest.

[fol. 753] The defendant's first complaint is that the invention is not disclosed because the specifications do not definitely show that there must be a series of holes for the combustible gas. It is quite true that the patentees did not limit their invention to such a series completely encircling the oxygen jet, and in so doing they betrayed their incomplete knowledge of what later experience has disclosed. On the other hand they showed beyond question that they meant to have the oxygen jet surrounded for a substantial arc anyway with combustion holes and that this was the sole purpose of their invention, distinguishing it on the one hand from Menne, who had a ring of flame, and from Jottrand, who had a single flame in advance. That there were advantages in this as against either extreme, time has amply proved.

It would scarcely seem necessary to go over the text of the patent to prove that this was in fact the disclosure, were it not for the insistence of the defendant. The patent leads off (page 1, lines 13-15), with a statement that the invention consists of bringing to the work the heating gas "in a plurality of streams." Again (lines 25-29), that the heating gas is lead to the metal "in several independent streams * * * to bring about a more intense heating." The diagrams show at the least three holes for heating, and the specifications always speak of the heating holes in the plural. Indeed there is not the faintest color for a contrary supposition except that at one place (page 1, lines 42, 43), the patentees speak of the pos-

[fol. 754] sibility of "leading the combustible only at one of the gas outlets." That the tool may be so used is true enough, but the patent is not for a process but for a mechanical device, and the patentee in this passage merely shows how it is possible, if desired, to use the tool in the ways of the prior art.

The next attack depends upon the fact that the examiner required the patentee to insert in all his claims a limitation that the heating outlets and the cutting outlet must be parallel. The specifications refer to these outlets, but nowhere describe them as parallel, though the drawings clearly show them to be such. The defendant argues that one may not look to the drawings to supply a defect in the specifications, Gunn v. Savage, 30 Fed. Rep. 366; Windle v. Parks & Woolson Mach. Co., 134 Fed. Rep. 381; Fulton Co. v.

Powers Regulator Co., 263 Fed. Rep. 578, 581; George Cutter Co. v. Metropolitan etc. Co., 275 Fed. Rep. 158, 162. If so, he says, there is an element in the claims which is not found in the specifications and the disclosure is void. Since the limitation is so simple that the mere statement of it is enough, it is obvious that there could not be a more technical and formal objection to a meritorious invention.

There are, however, two answers, each complete. The first is that the rule in question has never gone further than to refuse to allow diagrams to supply an element altogether lacking from the specifications, and second, that the parallelism is not a feature of the speci- [fol. 755] fications at all but merely a limitation imposed upon the claim. All the cases cited except the last recognize that the drawings are admissible to clear up any details of the specifications which are ambiguous. The last case cited does not dispute this rule. In the case at bar the relative direction of the outlets is not specified, but they are merely mentioned since it was scarcely necessary to describe them at all. One must look to the drawings for a definite understanding of how the tool is to be organized in this regard, but since all the features are mentioned and described generally, one has the right to do so. If it were essential to the practice of the invention, which it is not, that the outlets should be parallel, the drawings might therefore be resorted to to show their direction and shape.

But the whole argument misconceives the action of the examiner and the patentee. The parallelism of the outlets was not a necessary element to the disclosure. Indeed Murphy's patent on which the original claims were rejected showed converging outlets. Perhaps the best tool will not be so made, but there is no reason whatever to say that if the outlets are not parallel the torch will not cut. Thus the detail added was in no sense a necessary part of the disclosure. All that happened was that the examiner refused to allow the claim as broadly as the disclosure would have justified. That does not make a patent void, of course, and the patentees quite sensibly agreed to the limitation because the claims still gave them all that they really wanted.

[fol. 756] There is no relevant prior art but Menne and Jottrand from each of which the patentees diverged. If it was an easy step from either to the patent in suit, it is curious that the art did not at once see it. The fact is that it took considerable experience and knowledge to see that in metal cutting it was necessary to "preheat" an area considerably larger than the cut in order to get the metal to the requisite temperature for actual combustion. Indeed, Menne's machine was not a cutter at all, though in view of Linde Air Products Co. v. Morse Dry Dock Co., 246 Fed. Rep. 834, it should be regarded as a relevant reference. Still, one cannot make proper cuts with a heating ring, and the division of such a ring into 6 to 8 small flames was as much an invention as to multiply Jottrand's single flame. The patent is not indeed a pioneer, but it was apparently final, and stabilized the cutting torch. I cannot see on what theory it can be declared invalid.

The plaintiff may take the usual decree on claim one.

Patent, 1,028,410

There is no doubt as to the infringement of this patent and that issue requires no discussion. The defendant's tip has merely flattened the cone of the patent upon itself and into a flat surface, and the claims in suit, Nos. 3, 6 and 7, read upon it literally as well as functionally. Thus the case turns upon validity. There can be [fol. 757] no pretence for claiming a broad invention; the disclosure is important only because it enabled a quick change of tip for variations in the necessities of the work. Yet there is no reason why, so far as it went, it should not be protected. The defendant's position depends upon two classes of anticipations, first those which issued before Whitford filed his original application, Mar. 4, 1911, and second those which were filed before that date, but had not issued till later.

In the first class there is strictly only Bruckner, 935,458. This torch was not a cutter at all but a welder, and the invention was primarily to allow the angle between the handle and the head with its tip to be varied so as to accommodate itself to difficult corners of the work. I agree that so far as Whitford's disclosure was a welder this would be a complete anticipation. The tip is unitary; in figure 5 and figure 3 (vide page 2, lines 4–6), the two gases are led into a common duct which forms a mixing chamber in an almost identical way with Whitford's. They do not mix until they reach that duct and their proportion could be controlled by the calibre of the ducts. What, then, it may be asked, was there left to do except to add an independent duct for the cutting jet and connect it properly to a source? There was indeed nothing more to do, and for that matter nothing to do after the welder patent in suit, 880,099, but to add a cutting jet and make it integral with the tip. Yet though the patent to Rodrigues-Ely 880,099, was issued in 1908, application was not [fol. 758] made for the patent in suit till 1911. Even if there are no great mechanical obstacles of design once you wanted a unitary tip, the idea had never before appeared in the art, which had proceeded by the awkward expedient of bringing the cutting jet to the work in an independent tip with a separate pipe. The added convenience of the combination was very considerable.

The defendant tried to prove a prior use of the invention in suit by one Wright. The evidence is not clear as to when Wright sold the torches which are disclosed in figures 4 and 5 of his patent as exemplified in Exhibits B1 and A1 respectively. The documents offered in support of his testimony, Exhibits C1 and D1, do not identify the kind of torches to which they refer and Exhibit D1 in February, 1911, refers to work still experimental. It is of course possible that Wright may have marketed some of his torches between the date of his application January 27, 1911, and Whitford's original application on March 4, 1911, and perhaps it is not unlikely that he did so before January 31, 1912, the date of the divided application. But as it is the date of the original application which counts, the proof is insufficient to show beyond doubt that his torches were

on sale or in public use before that time. Thus on any showing Wright's patent would have to stand only as an earlier application.

However, I regard Wright's whole invention as irrelevant, because the disclosure is not the same. He led his two heating gases into an [fol. 759] aperture in the head where the mixing began. The tip fitted into this aperture but did not wholly fill it, and there were but two ducts in the tip instead of three as in Whitford, Reich and Clifford. Obviously this did not allow for variation in the composition of the heating mixture by mere changes in the tip. The ducts in the head being necessarily constant in bore, the deliveries of oxygen and acetylene, given the pressures, must be always the same and the mixture could be changed only by changes of pressure. In Whitford the ducts for oxygen and acetylene were in the tip and the mixing did not begin outside it. Thus the quality of the heating mixture can be made to vary by differences in their relative bores, that is by the substitution of a tip in which the bores varied. This was what the art wanted, contributing, as it did, very markedly to the convenience of the operator, who had only to substitute the proper tip when he wanted a different mixture.

In the second class, i. e., those pending when Whitford's application was filed, there are three relevant patents, Brousseau, 992,156, Clifford, 1,018,613, and Reich, 1,097,203. Strictly speaking all are alike in point of law, but Brousseau viewed only as disclosure does not seem to me to anticipate and I shall therefore consider it separately as though it were part of the prior art. It was a cutting torch, unlike Bruckner, and, save for a detail which I shall mention in a moment, it would anticipate. That detail is that the tip was divided in two. The tip proper contained only two ducts, that for the cutting jet and [fol. 760] that for the mixed combustible. Above the tip was a cylindrical member, 12, in which there were three inlets, one for the cutting jet, and two for the two combustible gases, which began their mixture in the member itself. It is quite likely that the reason why Brousseau did not incorporate this member into the tip was that he inserted in the mixing chamber a curious conical member 32, designed to secure a more intimate mixture. This it would have been impossible to do if the tip had not been in two pieces.

However, the tip as it stands is not single, and is incapable of the advantages of the plaintiff's and defendant's device. It is indeed sometimes said that there can be no invention in making into two parts what was single, or vice versa. So far as such statements explain any given situation, they are very well, but they should not be taken as positive rules of general application. It is often an invention of considerable merit to combine into one part what everyone had theretofore thought must be in two. In the case at bar it is certain that Brosseau's torch was not fitted as a universal head for interchangeable tips, and that it required the suggestion from someone else to make it so. It is true that once one thought of it, there was not much trouble in making the changes, but that is often so. Experience might show that it was unnecessary to adopt Brosseau's awkward member, 32, and that the remaining two parts might be consolidated, but that experience was apparently not yet at hand.

[fol. 761] Regardless of the fact therefore that his application was pending with Whitford's I see no reason to treat his disclosure as an anticipation.

In the second class the patents to Reich, 1,097,203, and Clifford, 1,016,613, are however quite different from Brousseau and the plaintiff cannot escape them as disclosures. Clifford would certainly have anticipated, and I understand that the plaintiff does not dispute it. Reich's disclosure is equally good, and indeed the only challenge to it is that it would be inoperative. That is, however, something which I have no right to assume. Certainly the flash-back valve is not a part of claims two and three of that patent. They might be practiced after omitting the valve which required no ingenuity. The valve was the only thing which could by any chance be thought to make the disclosure inoperable. On the other hand none of their claims conflict with the claims in suit. Upon the same disclosure, or more accurately upon a disclosure which could support Whitford's claims, these earlier inventors sought and obtained claims made up of different combinations from those claimed by Whitford.

The question is therefore squarely presented whether on the issue of prior invention it is the claims or the disclosure which counts. That question is unfortunately left in much confusion in the cases. On principle it would seem that the claims were the place to look for the "invention." The disclosure, so far as it is only a description of [fol. 762] the machine, process or composition, is certainly not the invention proper. It does not tell which of the various elements disclosed the patentee selects as the combination which it will be profitable to follow. Without some such selection the art is left without cue for omission and must reproduce the whole disclosure in all its details. The claims alone give any scope to the invention and some scope is essential to its value. It would seem that the "invention" must lie in the act of selecting out of the possible combinations which will read upon the disclosure, such as are new and useful. Leonard Co. v. Maxwell etc. Co., 252 Fed. Rep. 584, 593 (C. C. A. 2).

Therefore, at least a priori, the "invention" must be found in the claims and in the claims alone, as was said categorically by Hough, J., in the District Court in Leonard Co. v. Maxwell etc. Co., 288 Fed. Rep. 62, 67. Indeed, that in my judgment is the strict theory, though some latitude is given in its application, as I shall hope to show. If so, when the issue arises of prior invention between two persons, whether it be on interference or when raised by an infringer, it should be decided only by a comparison of the claims, i. e., of that part of the patent or application which sets out what combinations of the elements disclosed the applicant says are his new and useful contributions to the art. That appears to me to be the meaning of Sundh v. Interborough etc. Co., 198 Fed. Rep. 94 (C. C. A. 2).

It may be argued that, if so, then logically it ought to be possible to [fol. 763] make new "inventions" out of published disclosures, which Revised Statutes Section 4886 forbids. I reply that Section 4886 does not attempt to define what are "inventions" but ex proprio vigore throws into the public domain all disclosures once published. It is indeed possible to make new "inventions" out of such dis-

closures, selecting new and useful combinations from their elements which no one has hitherto observed. The reason such "inventions" will not support a patent is not because they are not "inventions" but merely because the statute requires as a condition that the description of the machine, process or composition in which the patented "invention" is embodied shall not itself have been published before. That is quite another matter from saying that there is no new "invention" and the confusion of the two has caused much uncertainty.

Therefore, if a disclosure is not published, the question of prior "invention" ought to depend altogether upon whether the claims of the patent in suit are themselves new, and in the case at bar neither Reich nor Clifford can be set up as prior inventors. In deciding this question Revised Statutes Section 4920 ought not to be considered at all; it is a mere rule of pleading, drawn from the analogy of those rules of the common law which required notice of evidence to be given under the general issue. Its incorporation into a statute is unfortunate, because it has led to the supposition that it added something to the definition of the conditions on which a patent might issue as contained in Section 4886.

[fol. 764] The matter is not, however, as clear as the foregoing would make it, which I have purposely oversimplified. For example, when the question is of double patenting, which is another aspect of precisely the same thing, it is not enough that the claims differ, Miller v. Eagle etc. Co., 151 U. S. 186, 196-202. The term "invention", covers more than the claims and how much more is very vague. Again, under Revised Statutes Section 4916, the re-issue section, it must appear that the matter added must be part of the same "invention". Obviously, if the "invention" lay only in the claims, the claims could not be substantially changed, i. e., no new claims could be added for different combinations of the elements disclosed, not even if they were for species of the genus already claimed.

It is apparent, therefore, that the law has not developed with such nice logical precision as in implied in what I have said. For example in Hilliard v. Fisher etc. Co., 159 Fed. Rep. 439, (C. C. A. 2), the court decided the case upon a comparison of the disclosures, and in Otis Elevator Co. v. Interborough etc. Co., 222 Fed. Rep. 501 (C. C. A. 2), upon the priority of discovery. All that was decided in Vacuum etc. Co. v. Dunn, 209 Fed. Rep. 219, (C. C. A. 2), was that a pending application was not a part of the prior art.

In Diamond etc Co. v. Kelly Bros., (No. 1), 120 Fed. Rep. 282, Judge Archbald distinguished between the effect of an earlier application as disclosure and as proof of prior invention, though he did not [fol. 765] say how they were to be distinguished.

Farmers' etc. Co. v. Beaver etc. Co., 236 Fed. Rep. 731, (C. C. A. 7), turned upon a comparison between the claims of patents copending with the patent in suit, though the case is not wholly clear. It cited Sundh v. Interborough etc. Co., supra, and (very curiously), Barnes etc. Co. v. Walworth etc. Co., 60 Fed. Rep. 605 (C. C. A. 7). I say "very curiously" because Barnes etc. Co. v. Walworth etc. Co., supra, held nothing of the kind but apparently that the disclosure

is what counts on the issue of prior invention thus making the difference between the third and fourth defenses of Section 4920 only one of form.

In Camp Bros. & Co. v. Portable etc. Co., 251 Fed. Rep. 603, (C. C. A. 7), the court considered a pending application as relevant on the issue of prior invention only by virtue of the claims It is true that the case does not lay down the rule in general terms, but there seems to be no doubt that it meant to follow Sundh v. Interborough etc. Co., supra.

In Willard v. Union Tool Co. 253 Fed. Rep. 48 (C. C. A. 9), the patent in suit was later in application than another patent to one Griffin. Griffin's patent had claims like those in suit except for one element. The resulting divergence did not in the court's opinion prevent Griffin from being the earlier inventor because he "had the conception of all the claims," as might be gathered from reading the disclosure as a whole. Hence the decision turned upon priority by [fol. 766] proof dehors the applications. Clearly the claims were not treated as the sole measure of the "invention".

In the sixth circuit it has been established by an unusual number of cases that copending applications count precisely as though they were part of the prior art. The comparison on the issue of prior invention is of the disclosures. This has been the rule for over thirty years as established in the following cases. Cochren v. Zimmermann, 53 Fed. Rep. 801, Drewson v. Hartje Paper Manufacturing Co., 131 Fed. Rep. 734, Electric etc. Co. v. Westinghouse etc. Co., 171 Fed. Rep. 83, Lemley v. Dobson-Evans Co., 243 Fed. Rep. 391, Jackson Co. v. Adler, 243 Fed. Rep. 386, Twentieth Century Co. v. Loew Co., 243 Fed. Rep. 373, Diamond Power Specialty Co. v. Merz Capsule Co., 276 Fed. Rep. 274, Concrete Appliances Co. v. Meinken, 262 Fed. Rep. 958, Gen. Electric Co. v. Cooper Hewitt Co., 249 Fed. Rep. 61.

Finally in Westinghouse etc. Co. v. Metropolitan etc. Co., 290 Fed. Rep. 681, (C. C. A. 2), it was held that new claims introduced into an application while in the Patent Office did not require any supplemental oath, if the disclosure was unaltered in essentials This was on the theory that "what any patentee has invented is theoretically what he discloses and the disclosure is the specification. A claim is a definition of that which has been described in the specification". Certainly this is inconsistent with the notion that the "invention" resides solely in the claims.

[fol. 767] Any conclusion amid the confusion of the cases is very doubtful. It appears to me that on the one hand the disclosure qua description is not the "invention", and that it certainly cannot be enough that the claims of the patent in suit read upon the description of a copending application. On the other hand it would seem that it is too extreme a doctrine to say that the "inventions" are necessarily different because they contain claims made up of different elements. As in so many other instances the ultimate question is one of degree, that is, how far removed are the purposes of the earlier inventor from those of the patentee. If they contain a combination similar in purpose; if, to use a vague phrase, they contain the fun-

damental idea of the patent in suit, it is not enough to save the latter that the claims are not the same. This is the rule in cases of double patenting and of reissues. No doubt it causes much litigation and is not as satisfactory as a nicely exact rule. But in such matters the law seeks even at the expense of certainty to follow the cruder standards of common-sense.

In considering Reich and Clifford I think that I must therefore go beyond a bare comparison of the claims, but still I cannot treat them as if they were in the prior art. I must see whether within their patents there can be found any purpose to contribute to the art the combination of an interchangeable single tip containing three ducts and a mixing chamber and available for use in a single head. That [fol. 768] must appear as one of the objects of the invention in the sense that it would have supported a reissue and would not have allowed a second patent. Especially in this aspect it is relevant to consider the inducements of the patent where the patentee sets out in general terms what he considers to be the benefits which he contributes to the art. So considered neither patent is for the same "invention" as Whitford's.

Reich states the objects of his invention on page 1, lines 9-47 of his disclosure and nowhere suggests anything like Whitford's. They are to prevent "back-flashes", to provide a combined blow-pipe and cutter, to make the nozzle movable so as to reach inaccessible spots and to cool the nozzle. The claims follow this declaration of his purposes. All the claims except two and three are for a combination containing the "back-flash check valve". Claims six and seven have, it is true, a "mixing passage" in the tip, but do not contain any cutting jet. Claim two contains the element of an angular rotatable tip and no cutting jet. Claim three is for a double clamping means and would not read on the disclosure of the patent in suit. Reich nowhere showed any purpose to select the combination of elements which Whitford claimed.

Clifford's objects (page 1, lines 13-28), were to allow the angle of the tip and head to be changed, to improve the mixture of his gases by a vortex movement, to separate if need be the cutting from the [fol. 769] welding tip, and to provide against "backflashes". His claims bear out these purposes. Claims one and seven were for pivotal changes between the handle and what he called the "burner-support". There was no requirement that the mixing chamber should be in the tip. Claims two and three were for the pivotal mounting combined with removability for the cutting tip which was a separate piece. Claim four was for a peculiar mounting of the two tips. Claim five was for the mixing plug and claim six for an asbestos or gauze packing, (page 2, lines 85-88), designed to prevent "back-flashes": In none of these any more than in Reich's application is any intimation to be found of what Whitford claimed.

Therefore, I find that neither of these was a prior "inventor" to Whitford. There is no injustice in this result. While they might have added such claims to their application they did not. To perceive the utility of Whitford's combinations and to set them forth would have benefited the art, which without such cases must reach

them by the aid of its own ingenuity. So long as the disclosure was not for all purposes dedicated to the public there is no reason why another who independently observes beneficient combinations should not be entitled to profit by his ingenuity. He has contributed something which the public might or might not have learned alone; never, except by some independent exercise of an originality which was apparently outside the compass of the routine artisan.
[fol. 770] The plaintiff may take a decree upon the claims of this patent.

Patent 880,099

This patent is for a welding torch and discloses a unitary tip in which the gases are mixed, in part by means of the sucking action of the oxygen which is assumed to be under a higher pressure than the combustible. The claims in suit, two and three, each speak of the purpose for which the tip is to be used. Claim two says that the patent is for "an apparatus for heating and welding metals by means of gases having separate conduits for the two kinds of gases under different degrees of pressure". Claim three has in substance the same language. It is probable, although not certain, that the defendant in practise uses its torch with pressures as nearly as possible equal. However, I cannot think that question relevant. The claims are for a tip made as the disclosure described and containing the features selected. If it may be used for gases at equal pressures it is no less an infringement though the patentee assumed that the pressures would be unequal. Infringement does not depend upon the way the torch is used and seems to me to have been shown.

The defendant's best reference against this patent is the French patent 363,119 to Eugene Odam published July 21, 1906, and therefore a part of the prior art when the patent in suit was applied for. [fol. 771] This was for a welding torch — is to be used for the same purposes as the patent. It contained a central duct for the oxygen jet and side ducts for the combustible to be admitted through oblique passages, k. k., from which the combustible was to be sucked as by an injector, just as was shown in figure two of the patent in suit (page 2, lines 4-6). "This jet of air or oxygen aspirates (produit d'aspiration) the combustible gas by the ducts k. k.". Thus the operation was the same and the purpose was the same, because at the outset of his specifications Odam says that his invention "has for its object a mounting for a tip especially made so as to be able to receive interchangeable tips capable of functioning with different combustible gases, whether or not under pressure."

The plaintiff objects to the sufficiency of this disclosure because the seal would be imperfect, thus allowing the mixture of gases before they reached the passage, h, and because in use the conduits, k. k., would change in bore and thus disturb the proper proportion between oxygen and acetylene. Properly to consider these objections I must take up the specifications and diagrams in some detail. It is in the first place clear that Odam presupposed a gas seal. Thus on lines 20-27 of page one, the patent reads: "The cylinder, A., at c., shows a threaded part, on which a packing ring, C., is designed to be screwed

which serves to hold the tip, when inserted into the cylinder, A, in- [fol. 772] suring a suitable hermetic seal, (hermeticite) between the body of the tip and the body A, of the cylinder." It may be argued that this seal was intended only to prevent the escape of the combustible along the side of the tip. Perhaps it was, yet the inevitable effect of screwing down the packing-ring, C., would be to transfer the pressure to the shoulder, N., of the tip through an unlettered ring and thence to the end of the tip where it abuts upon the shoulder, d, at the rear of the cylinder. If properly machined this would make the same gas seal as the defendant's tip and by just the same means.

It appears illegitimate to criticize this part of the disclosure on the ground that the seal might be imperfect. Rather it must be supposed that the apparatus would be made by competent persons who understood the necessary conditions of good workmanship. The packing ring must be supposed to insure a suitable seal, where a seal was necessary. It was preeminently so at the end of the tip, and even if the intention was also to prevent leaks of the combustible, that should not detract from its primary effect. Indeed, it was apparently on the washer O, between the shoulder, m, and the unlettered ring that Odam counted (page 1, lines 55-57), to prevent the escape of the combustible.

As to the possible disturbance of the combustible ducts, k.k., the argument is that by screwing and unscrewing the plug, F., which is [fol. 773] inserted in the threaded recess, e., the plug would itself turn in the tip, E., and change the bore of the ducts. But, the patentee himself says (page 1, lines 50-54), that the threading of the extended part of the plug, F, and its insertion into the threaded recess, e, is not an essential part of his disclosure. I should have thought it so, had he not said it, but his language is clear on that detail. Thus he says in the passage in question: "Moreover, resort may be had to any other means of mounting thus to fix the tip at the end of the cylinder, A, of the mounting." The word used is "fixer" and is translated "attach," "secure" and "fix." I have chosen "fix," because I think the purpose was to carry the duct, p., to the open chamber in front of the nut, D. If the shoulder, d., had extended across the whole end of the mounting it would be difficult to insure the registry of the duct, p, with some corresponding duct in the shoulder. The extended end of the plug, F, at once insured the alignment of the tip as a whole, and avoided any danger as to registry. But it was in no sense necessary that it should be threaded and the patentee said so.

If therefore it proved in practise troublesome to thread both the plug and the recess. e, it seems to me the most obvious detail to omit that feature. The seal at the shoulder, d, being as adequate as the defendant's, I cannot see why Odam was not a complete anticipation if the defendant's tip be an infringement. Odam's summary at the close, the equivalent I suppose of our "claim," is a complete descrip- [fol. 774] tion of the patent in suit. The phrase, "un chalumeau qui est maintenu at assujetti par un presseetoupe," is variously translated, "secured," "retained" and "held and made tight." The last is clearly

the right translation, since it alone gives any effect to "assujetti," a stronger word than "secured," and in colloquial French the equivalent of our "subjected."

Therefore, I find patent 880,099 invalid for anticipation. The plaintiff may take a decree upon the first two patents; the defendant upon the last. There will be no costs.

Learned Hand, D. J.

[fol. 775] IN UNITED STATES DISTRICT COURT

[Title omitted]

INTERLOCUTORY DECREE—Filed Feb. 9, 1924

This cause came on to be further heard at this term of Court, and was argued by counsel, and thereupon, upon consideration thereof, it was ordered, adjudged and decreed as follows:

1. That the Letters Patent in suit No. 874,666, granted December [fol. 776] 24, 1907, to Emile Gauthier and Camille Rodrigues-Ely for Apparatus for Perforating and Cutting Metals, and subsequently assigned to plaintiff, are good and valid in law as to claim 1 thereof; that the Letters Patent in suit No. 1,028,410 granted June 4, 1912, to John Walter Whitford, for Blow Pipe, and subsequently assigned to plaintiff, are good and valid in law as to claims 3, 6 and 7 thereof; and that the Letters Patent in suit No. 880,099, granted February 25, 1908, to Camille Rodrigues-Ely and Emile Gauthier for heating and welding Metals and subsequently assigned to plaintiff are invalid as to claims 2 and 3 thereof.

2. That Emile Gauthier and Camille Rodrigues-Ely were the first, true, original and joint inventors of the invention described in said letters patent No. 874,666 and claimed in claim 1 thereof; and that John Walter Whitford was the first, true, original and sole inventor of the invention described in said Letters Patent No. 1,028,410 and claimed in claims 3, 6 and 7 thereof.

3. That the defendant, The Alexander Milburn Company has infringed upon claim 1 of said Letters Patent No. 874,666 and upon claims 3, 6 and 7 of said Letters Patent No. 1,028,410.

4. That a permanent injunction issue out of and under the seal of this Court, directed to the said defendant, The Alexander Milburn [fol. 777] Company, strictly enjoining it and its officers, servants, agents, workmen and employees from making, or causing to be made, using, or causing to be used, selling or causing to be sold, or advertising, or causing to be advertised for sale any torches, tips for torches or other apparatus containing or embodying or involving the use of the inventions or discoveries covered by said Letters Patent Nos. 874,666 and 1,028,410 or either of them, or any material or substantial part

thereof, and from infringing upon said Letters Patent or either of them in any way whatsoever.

5. That the plaintiff, Davis-Bournonville Company, recover of the defendant, The Alexander Milburn Company, the profits, gains and advantages which the defendant has derived, received, earned or made by reason of its infringement of said Letters Patent Nos. 874,666 and 1,028,410, together with any and all damages the plaintiff has sustained by reason of its said infringement; and this cause is hereby referred to William Parkin, Esq., as a Master of this Court to take, state and report an account of the said profits and damages under and in accordance with this decree; and the said defendant and its officers, agents and employees are directed and required to attend before said Master from time to time as required and to produce before him such apparatus, books, documents, and papers and to submit to such oral examination or otherwise as the said Master may [fols. 778-785] require in connection with said accounting and the assessing of said damages.

Learned Hand, United States District Judge.

[File endorsement omitted.]

[fol. 786] IN UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANT'S PETITION FOR AND ORDER ALLOWING APPEAL—Feb. 15, 1924

To the Honorable the District Judges of the United States in and for the Southern District of New York:

The above named defendant, The Alexander Milburn Company, conceiving itself aggrieved by the Interlocutory Decree made and entered by this Court on the 9th day of February, 1924, in the above entitled cause, wherein it was ordered that permanent injunction be issued out of and under the seal of this Court directed to this defendant, The Alexander Milburn Company, strictly enjoining it from making, using or selling torches, tips for torches or other apparatus containing, embodying or involving the use or the alleged inventions or discoveries covered by letters patent Nos. 874,666 and 1,028,410 or either of them, or any material or substantial part thereof, does hereby appeal from so much of said decree [fol. 787] as relates to said letters patent to the United States Circuit Court of Appeals for the Second Circuit, for reasons specified in the assignment of errors which is filed herewith, and it prays that its appeal in said cause may be allowed and a citation granted, directed to the above named plaintiff, Davis-Bournonville Company, commanding it to appear before said United States Circuit Court

of Appeals for the Second Circuit to do and receive what may appertain to justice to be done in the premises, and that a transcript of the record, proceedings and papers and of the opinion of the Court and the exhibits upon which the said decree was entered, may be duly authenticated by the Clerk of the Court, and may be transmitted to the said United States Circuit Court of Appeals for the Second Circuit, and your petitioner prays for all general and equitable relief thereon.

The Alexander Milburn Company, by A. Parker Smith, Solicitor & of Counsel for Defendant.

36 West 44th Street, New York City.

[fol. 788] The foregoing Petition for Appeal is allowed this 19th day of February, 1924.

Henry W. Goddard, U. S. District Judge.

Service of copies of the foregoing petition for appeal and Assignment of Errors therein referred to is hereby admitted this 18th day of February, 1924.

Pennie, Davis, Marvin & Edmonds, Solicitors for Plaintiff, Davis-Bournonville Company.

Cross appeals being in preparation, each party waives the filing of any cost bond in the other's appeal.

A. Parker-Smith, Solicitor for Defendant. Pennie, Davis, Marvin & Edmonds, Solicitors for Plaintiff.

New York, Feb. 18, 1924.

[fol. 789] IN UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANT'S ASSIGNMENT OF ERRORS—Filed Feb. 18, 1924

Now comes the Alexander Milburn Company, defendant in the above entitled cause and says that in the record and proceedings therein there is manifest error and that the District Court of the United States for the Southern District of New York erred in this, to wit:

1. In entering the decree entered in said cause upon the 9th day of February 1924.

2. In decreeing any relief to the plaintiff against the defendant, The Alexander Milburn Company, and in not dismissing the Bill of Complaint.

3. In decreeing that Letter Patent No. 874,666 granted December 24, 1907 to Emile Gauthier and Camille Rodrigues-Ely for Ap-

paratus for Perforating and Cutting Metals are good and valid in law as to claim 1 thereof.

[fol. 790] 4. In not decreeing that said Letters Patent No. 874,666 are invalid and void as to said claim 1 thereof.

5. In decreeing that Emile Gauthier and Camille Rodrigues-Ely were the first, true, original and joint inventors of the invention described in said Letters Patent No. 874,666 and claimed in claim 1 thereof.

6. In decreeing that the defendants, The Alexander Milburn Company has infringed upon claim 1 of said Letters Patent No. 874,666.

7. In decreeing that Letters Patent No. 1,028,410 granted June 4, 1912 to John Walter Whitford for Blow Pipe, and subsequently assigned to plaintiff, are good and valid in law as to claims 3, 6 and 7 thereof, or as to any of said claims.

8. In not decreeing that said Letters Patent No. 1,028,410 are invalid and void as to claims 3, 6 and 7 thereof, and as to each of said claims.

9. In decreeing that John Walter Whitford was the first, true, original and sole inventor of the invention described in said Letters Patent No. 1,028,410 and claimed in claims 3, 6 and 7 thereof.

10. In decreeing that the defendant, The Alexander Milburn [fol. 791] Company, has infringed upon claims 3, 6 and 7 of said Letters Patent No. 1,028,410 or any of said claims.

11. In decreeing that a permanent injunction issue out of and under the seal of this Court, directed to said defendant, The Alexander Milburn Company, strictly enjoining it and its officers and servants, agents, workmen and employees from making, or causing to be made, using, or causing to be used, selling or causing to be sold, or advertising, or causing to be advertised for sale any torches, tips for torches or other apparatus containing or embodying or involving the use of the inventions or discoveries covered by said Letters Patent Nos. 874,666 and 1,028,410 or either of them, or any material or substantial part thereof, and from infringing upon said Letters Patent or either of them in any way whatsoever.

12. In decreeing that the plaintiff Davis-Bournonville Company recover of the defendant, The Alexander Milburn Company, the profits, gains and advantages which the defendant has derived, received, earned or made by reason of its infringement of said Letters Patent 874,666 and 1,028,410, together with any and all damages the plaintiff has sustained by reason of said infringement.

13. In decreeing that this cause be referred to William Parkin, Esq., as a Master of this Court to take, state and report on account of the said profits and damages under and in accordance with this [fol. 792] decree; and that the said defendant and its officers, agents

and employees are directed and required to attend before said Master from time to time as required and to produce before him such apparatus, books, documents and papers, and to submit to such an oral examination or otherwise as the said Master may require in connection with said accounting and assessing of said damages.

14. In denying defendant's motion for leave to withdraw the Stipulation, Plaintiff's Exhibit No. 1, in so far as the same relates to the title of the plaintiff to the patents in suit as set forth in paragraph 2 thereof, and for leave to file a supplemental answer setting forth the transfer of all of plaintiff's title to the patents in suit subsequent to the filing of defendant's original answer herein and before the trial of the case.

15. In not dismissing plaintiff's bill of complaint of its own motion upon learning that the plaintiff has divested itself of all title to the patents in suit after defendant filed its original answer herein and before the trial of the case.

16. In not holding and decreeing the above entitled cause abated and suspended upon the suggestion to the Court that the plaintiff had divested itself of all title to the patents in suit pendente lite and thereupon suspending all further proceedings therein, and setting aside [fol. 793] all orders and stipulations made and all proceedings had therein after the date of such transfer of title from plaintiff.

Wherefore defendant prays that the said Interlocutory Decree be reversed and that the United States District Court for theSouthern District of New York be directed to enter an order that said decree and all proceedings thereunder be set aside and plaintiff's Bill of Complaint herein dismissed with costs to this defendant.

The Alexander Milburn Company, by A. Parker Smith,
Solicitor & of Counsel for Defendant.
36 West 44th Street, New York City.

[fol. 794] IN UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANT'S CITATION

UNITED STATES OF AMERICA,
Second Judicial Circuit, ss:

By the Honorable Learned Hand, United States District Judge for the Southern District of New York, in the Second Circuit, to the Davis-Bournonville Company:

You are hereby cited and admonished to be and appear before the United States Circuit Court of Appeals for the Second Circuit within thirty days from the date of this citation, pursuant to an appeal duly

allowed and filed in the Clerk's Office of the United States District Court for the Southern District of New York wherein the Alexander Milburn Company is the defendant-appellant and you are plaintiff-appellee, to show cause, if any there be, why the order entered by in- [fols. 795-883] terlocutory decree in said cause February 9th, 1924, as in said appeal stated, should not be reversed and corrected and why speedy justice should not be done to the parties in that behalf.

Given under my hand at the City of New York, in the Southern District of New York, on the 19th day of February, 1924.

(Signed) Henry W. Goddard, U. S. District Judge.

Service of a copy of the foregoing citation admitted this 20th day of February, 1924.

Pennie, Davis, Marvin & Edmonds, Solicitors for Plaintiff.

[fol. 884] In United States Circuit Court of Appeals for the Second Circuit

Before Hon. Charles M. Hough, Hon. Martin T. Manton, Hon. Julius M. Mayer, Circuit Judges

Davis-Bournonville Company, Plaintiff-Appellant,

vs.

The Alexander Milburn Company, Defendant-Appellant.

Cross-appeals From Decree in Equity Entered in the District Court for the Southern District of New York

Opinion

Plaintiff, as owner, sues on three patents: 874,666, dated December 24, 1907, and hereinafter called the "first cutting patent"; 1,028,410, dated June 4, 1912, and hereinafter called the "second cutting patent"; 880,099, dated February 25, 1908, and hereinafter called the "welding patent."

[fol. 885] All the patents relate to the art of heating and/or welding metals by means of a mixture of gases under pressure,—a subject described very generally with particular reference to the cutting of metal in Linde, etc., Co. vs. Morse, 246 Fed., 834 (837). The first cutting patent is described as an "apparatus for perforating and cutting metals," and the first claim reads thus:

"In an apparatus for cutting metals by means of a heating jet, and an oxidizing jet, the mouthpiece having an oxidizing gas current outlet and several combustible gas outlet openings arranged and adapted to discharge combustible gas in streams substantially parallel to the stream of oxidizing gas, substantially as and for the purpose set forth."

The second cutting patent is described merely as a "blow-pipe," and the third claim is as follows:

"Apparatus for cutting metals by means of gases, comprising a socketed head and a unitary removable and replaceable tip, said head having three separate conduits for gases to form a combustible mixture and oxygen for cutting, respectively, and said unitary tip being provided therein with a cutting jet passage having a delivery [fol. 886] orifice at the forward part of the tip and communicating at the rear part of the tip with the corresponding conduit in the head and with a heating jet passage having a delivery orifice at the forward part of the tip and separate inlets in the rear part of the unitary tip communicating with the corresponding conduits in the head, the head and tip being provided at the joint between the two with co-operating sealing seats which prevent leakage and all improper mingling of the gases."

The welding patent, though described as concerned with "heating and welding metals," is not for a process but for a mechanical device, and the second claim is as follows:

"An apparatus for heating and welding metals by means of gases having separate conduits for the two kinds of gases under different degrees of pressure, an interposed removable part constituting a nozzle having a mixing chamber and formed at one end with radial channels constituting ports for the passage of gas under low pressure to the mixing chamber and a longitudinal channel for the passage of gas under high pressure to the mixing chamber."

The Court below held that Claim 1 of the first cutting patent, and Claims 3, 6 and 7 of the second cutting patent, were valid and in- [fol. 887] fringed, but declared Claims 2 and 3 of the welding patent (the only ones sued on) invalid for anticipation. From interlocutory decree accordingly both parties appealed.

Dean S. Edmonds, J. F. Brandenburg, E. H. Merchant, for plaintiff-appellant;

A. Parker-Smith and James A. Watson, for defendant-appellant;

Thomas Ewing filed a brief as amicus curiae.

HOUGH, C. J.:

The case was tried below under a quite usual stipulation of parties with regard to plaintiff's title to the patents in suit. After decision rendered but before decree entered, defendant, having discovered some asserted defect in plaintiff's title, moved to be relieved from its stipulation and in effect to re-try the cause. This motion was denied, and defendant assigns for error the Court's refusal to permit withdrawal from the stipulation and filing a supplemental answer.

It is somewhat difficult to perceive defendant's right to urge this point. We hear this appeal solely by virtue of the statute (Jud. Cod., Sec. 129). Each party's right to appeal arises from the granting or refusing of an injunction. The decree appealed from makes no reference to the matter of this stipulation.

An appeal from a final decree brings up all interlocutory matters, [fol. 888] but an appeal from an interlocutory decree brings up only those matters covered by the statute allowing an appeal unknown to the historic course of equity. The defendant's technical right to urge this point from such a decree and one that says nothing at all about this stipulation, is not perceived. (Harding vs. Corn Products, 168 Fed., 658.)

But the real point in controversy is plain enough from the papers submitted. Therefore, although we hold the point not technically presentable, we express opinion on the merits, as follows, viz: Granting or refusing leave to retire from a stipulation is a matter of discretion, and no abuse of discretion is shown herein. On the contrary, a most equitable method of curing the difficulty was pointed out by the Trial Judge and defendant refused to accept the suggestion. It insisted as a right upon that which was always a matter of grace. There is no substantial merit in this attempted appeal entirely apart from its technical imperfection.

As to the welding and the first cutting patents it is unnecessary to expand the findings of fact made below by L. Hand, J.

Clumsily, perhaps, and in a mechanical form that failed to win recognition, the Odam French patent (363119 of 1906) presents every patentable attribute or element contained in the claims of the welding patent in suit. It may be, and quite probably is true, that Odam's tool could not be said to have tips removable and replaceable by the user, i. e., the mere workman, to meet changing con- [fol. 889] ditions on the job, and to provide welding flames of different sizes; but the claims in suit are not drawn to cover merely a specially convenient tool, but to get as near as the law permits to covering a principle of operation; and everything essential to reducing that principle to practice Odam reveals. That his reduction was not the best one, nor a specially successful one is immaterial in suit on such claims as the 2d and 3d of No. 880,099. We agree with the Court below in its exposition of the anticipation found in Odam's published patent.

As to the first cutting patent, there is nothing to add to the opinion below; no question of law is raised, and the decree as to No. 874,666 is correct.

That the second cutting patent is infringed if valid, and is valid unless defeated by the plea that Whitford was not the "original and first inventor or discoverer of any material and substantial part of the thing patented."—is also a point on which nothing need be added to Judge Hand's opinion. The substantial question on this appeal is raised by the following facts concerning Whitford No. 1,028,410.

Whitford filed application March 4, 1911, and received patent June 4, 1912. One Clifford filed application January 31, 1911, and received patent February 6, 1912, for a "Torch" (No. 1,016,613). Clifford sought and obtained protection for an invention quite distinct from that of Whitford, and his claims do not touch or affect those of Whitford; but in the disclosure of his specification

[fol. 890] he shows a structure which plaintiff admits,—"does comply with the requirements of the Whitford patent."

The argument for defendant based on Clifford's patent is also rested on two other co-pending applications; but as there is considerable doubt as to the similarity of subject matter or the operative capacity of these other disclosures we state the question as raised by Clifford alone.

That question is this,—assume two co-pending applications for patent, both ultimately granted; each discloses certain substantially identical matter, which matter is not made the basis of claims in, and is not covered by the claims of the application first filed, but is the basis of and is covered by the claims of the later application;—under such circumstances can the patent of the earlier filing-date be used to invalidate the other patent?

The conditions on which a patent may be granted are set forth in R. S. 4886, and the usual defenses to a patent once granted in R. S. 4920. The enumeration of neither section is exclusive; the granting section recognizes that there must be "other due proceedings had,"—not described even by reference; and the defense section does not forbid objection to legal or equitable relief if such objection is inherent in the nature of patent rights or grows out of the fact that they are property,—like other incorporeal hereditaments; of this the list of possible defenses set forth in Walker on Patents is sufficient proof. But no one can anticipate all possible [fol. 891] defenses. The 5th edition of Mr. Walker's book declared in 1917 (Sec. 106) that "no abandonment of an invention after the issue of letters patent has ever been judicially decided to exist in the United States," yet contemporaneously Macbeth vs. General, etc., Co., 246 Fed., 695, was under consideration, which does not in terms, but does in effect, hold that very thing.

If, therefore, without regard to any formal category of defenses one considers the question whether the statements contained in a specification, but not deemed of sufficient importance by the applicant to form the basis for a claim, should be regarded in equity (i. e., justice) as preventing another person from making the same statement and grounding a claim upon it before the earlier statement has become public,—the answer is to us, plainly in the negative.

There seems no material difference between the attitude of one who files application for a patent and never presses it, and one who does the same thing and never uses a portion of his disclosure. It was held in the Corn-planter Patent, 23 Wall., 181, that a mere application, subsequently abandoned or withdrawn, was no bar to a subsequent patent therefor to another. As Bradley, J., remarked (p. 211), "It can only have a bearing on the question of prior invention or discovery, * * * the mere fact of having unsuccessfully applied for a patent therefor cannot take the case out of the category of unsuccessful experiments."

[fol. 892] We have been favored in this litigation by the brief as amicus of Mr. Ewing, formerly Commissioner of Patents, and are

advised that for many years it has not been the Patent Office practice to search for references under abandoned applications. They are treated as having no bearing upon the patentability of matter subsequently presented by others. This settled practice of an "executive branch of the government" in harmony with Judge Bradley's remarks (Bates vs. Sulzberger, 157 U. S., 1, at p. 34) may well justify the holding now made, that an application for a patent either abandoned or withdrawn has per se no influence at all in ascertaining the state of the prior art.

But in the present instance Clifford pursued his application, and presumably obtained the claims he wanted, none of which rests upon the matter which this defendant wishes to use. When Clifford's patent was published, so much of his disclosure as was not covered by a claim was dedicated or surrendered to the public. (Walker, 5th ed., p. 222, citing Jewell Filter vs. Jackson, 140 Fed., 340; and see Brammer Co. vs. Witte, 159 Fed., 726 (728); McClain vs. Ortmayer, 141 U. S., 419 (424); Ball, etc., Co. vs. Sanford Co., C. C. A. 2, Feb. 18, 1924.) But such dedication or "disclaimer" (as it is called by Sanborn, J., in the case first cited), did not and could not take place until the public could become acquainted with what was given to them; and that knowledge could only be gained by the publication of the patent.

[fol. 893] Thus the best reason, or a logical reason, for holding as we do, that no part of a pending application for a patent can be considered as a part of the prior art, is that that phrase "prior art" means something that a man skilled therein may by reasonable, or perhaps unreasonable diligence discover; and he cannot discover that which is contained in a confidential communication to the Commissioner without coming perilously near, if not committing, a criminal offense, —something never presumed. This point has been emphasized in this circuit in Mergenthaler vs. International, 229 Fed., 168 (172) (on appeal) and Leonard vs. Maxwell, 288 Fed., 62 ((66); and appeals did not modify the holdings referred to (229 Fed., 407; 252 Fed., 584).

Turning now from general considerations to the statutory defenses of R. S. 4920, the third (that the device in suit has been patented or described in some printed publication prior to the patentee's invention or discovery), and the fourth (that the patentee was not the original and first inventor or discoverer—the defense pleaded in this case),—have been discussed in this circuit in Sundh, etc., Co. vs. Interboro, 198 Fed., 94 (96-97). To the rule there stated, and usually formulated somewhat loosely, that copending applications are not prior art as against each other, this circuit has consistently adhered. Another formulation is found in Walker, 5th ed., p. 60. The facts of this case (under the case cited) do not permit the use of the third defense.

[fol. 894] If Clifford had not only described but claimed the matter now sought to be used by defendant, the Sundh case, supra (p. 67) is clear in holding that in the absence of other evidence, and because an application is a constructive reduction to practice, Clifford

would have been the original and first inventor or discoverer because he filed the first application; and the fourth defense would succeed.

Thus the question is narrowed to this: Does the phrase "first inventor" of the fourth defense, signify one who describes patentable matter or one who both describes and claims it?

An analogy may be taken from R. S. 4887, providing that one may receive a patent for his invention even though it had "been first patented * * * in a foreign country" except as provided in the act. What is patented in the foreign country is the invention, yet it has long been held that since what may prevent the obtaining of an American patent is the existence of a foreign patent, the two patents must be identical, which means that the "inventions actually claimed" must be identical. For "it is not sufficient that the foreign patent may disclose the invention of the later United States patent where it is not claimed." (Westinghouse, etc., Co. vs. Stanley, 138 Fed. 823; General Electric vs. Alexander, 280 Fed., 852).

On reason it seems difficult to imagine that anything can rise to the dignity of invention which the discoverer or deviser thereof does not see fit to define by a claim. The inventor referred to in the [fol. 895] granting section (4886) and the inventor referred to in the fourth defense of 4920 must be the same person or kind of person. He is defined in 4886 as one who has discovered something new and useful "not known and used by others in this country" before his discovery. And "not patented or described in any printed publication," etc., before said time.

Apply that language to the present case; did Clifford know in January, 1911, what Whitford knew in the following March? Looking merely at the two applications Clifford, of course, could not have known except from the development of his own thought, for the public, as has been shown, could not know anything about it. Whatever else invention may be, it is an idea, and the quest for its origin is a search for the whole idea and not a fraction of it. There can be no conception of invention except in the complete performance of the mental portion of the inventive act (DeLaski vs. United States Tire Co., 235 Fed., 290). Can it now be said that, by the mere statement of matter which he did not think to use, Clifford had rounded out and completed the mental portion of his inventive act?

We think it cannot. Clifford may be said to have observed certain phenomena, but he certainly drew from them no conclusion that such phenomena contained patentable matter.

The question may be thus put,—is mere disclosure (confidentially made to the Commissioner of Patents) and no more per se sufficient [fol. 896] evidence of invention? We think that it is not, for the reason that in the absence of an appropriate claim there is no evidence of the perfection of the mental concept which constitutes the intellectual part of invention.

These thoughts were categorically formulated in Farmers' Handy Wagon Co. vs. Beaver, 236 Fed.. 731. In this case, completely like the present one on this point, Kohlsaat, J., held that the patent of earlier application was to be considered "for whatever they disclose.

This should we hold be limited to such matters as are included in their several claims, unaided by their specifications or by extrinsic evidence except where necessary to elucidate and make the same clear."

To this is opposed Lemley vs. Dobson, etc., Co., 243 Fed., 391 (6th Circuit), which holds broadly, that a patent the filing date of which antedates the filing date of the patent in suit is "prima facie anticipatory" (p. 395). With this statement of rule we must disagree, if for no other reason than that the word "anticipatory" is far too broad.

A patent formally granted may be invalidated or rendered practically worthless for many reasons, and "anticipation" is a technical name for one of those reasons. The valuable brief of Mr. Ewing as amicus, in our opinion, correctly states that when anticipation is proven the consideration of the patent fails. There can, however, be no anticipation unless constructively at least the public was timely [fol. 897] in possession of that which the patentee sought to appropriate to himself. But in the present instance the public as above shown knew nothing at all about what either Clifford or Whitford had said to the Commissioner, when Whitford filed his application. Consequently Clifford could not possibly anticipate Whitford.

Priority of invention does not mean the same thing as anticipation in invention. The logical reason for sustaining priority of invention is to prevent double patenting; and double patenting is forbidden, not because that phrase can be found in any statute, but because two monopolies of the same entity are inherently repugnant to the essential nature of the patent system.

Thus if Cifford had not only disclosed but claimed, something that Whitford later also disclosed and claimed, the former under the Sundh case (supra) would plainly have been the first inventor; not because he disclosed the something, but because he was entitled to the first patent, i. e., because double patenting must be prevented.

For the reasons now set forth we hold that a "first inventor" within the meaning of that phrase as used in the fourth defense of 4920 must be a person who perfects his invention; no invention can be intellectually perfected unless it is thought out and concluded, and the only evidence of such perfected invention ordinarily derivable from any patent is a union of disclosure and claim. Evidence of disclosure only (all we have here) is not enough; and be- [fol. 898] fore publication disclosure alone does not evidence anticipation.

Thus in a sense, the question becomes one of evidence; and it is, we think, because evidence of invention is wanted for so many purposes, that the use of the word is necessarily attended with peril of inaccuracy. A quite natural peril, considering that the word cannot be effectively defined (McClain vs. Ortmayer, supra, p. 427).

Thus evidence of invention is required upon allegations of prior use, where claims and/or specifications exist only on one side of the contest. Evidence of invention is also wanted in interferences, and above all on questions of infringement, including all matters of patent scope and interpretation. It is in the multiplication of pur-

poses for which evidence of invention is desired that there lies the explanation of the varying ways in which evidence of invention has been found.

Thus it being elementary that a patent is enforced according to its claims, if for no other reason than that what is sued on is a claim; the most frequent question is: What do the claims mean? Of course, they mean to define an invention, and it is often said that the invention is determined by the specification, that is, the meaning of the claims is delimited, i. e., determined, by the specification. (Hall vs. Ellaman, 213 Fed., 341; Westinghouse vs. Metropolitan, 290 Fed., 661.) What is wanted is to get at the meaning of the whole document, claims and all, and the method of so doing has never [fol. 899] been better stated than by Sanborn, J., in Jewell, etc., Co. vs. Jackson, 140 Fed., 340 (344), thus:

"The true rule is that the specification of a patent, which forms a part of the same application as its claims, must be read and construed with them, not for the purpose of expanding, nor for the purpose of limiting or contracting the latter, but for the purpose of ascertaining their true meaning and the actual intention of the parties when they (the claims) were made and allowed."

A claim may be evidence standing alone; and so may a disclosure standing alone, but ordinarily they are united, and probably it is true that in most instances of use the disclosure is more persuasive evidence than the claim; but we think no case can be found holding on consideration that a disclosure without a claim is complete, competent and fully persuasive evidence of perfected invention.

Result is that we disagree with the ruling of Lemley vs. Dobson, supra, and find ourselves in accord with the categorical statement above quoted from Farmers etc. Co. vs. Beaver, supra; holding in conclusion that a patent in evidence under the fourth defense speaks only from its date of grant, as to all matters disclosed but not claimed therein.

Decree affirmed; no costs.

[fol. 900] In United States Circuit Court of Appeals

[Title omitted]

Appeal from the District Court of the United States for the Southern District of New York

Order for Mandate—Filed June 2, 1924

This cause came on to be heard on the transcript of record from the District Court of the United States, for the Southern District of New York, and was argued by counsel.

[fol. 901] On consideration whereof, it is now hereby ordered, adjudged and decreed that the decree of said District Court be and it hereby is affirmed, without costs.

It is further ordered that a Mandate issue to the said District Court in accordance with this decree.

C. M. H., J. M. M.

[File endorsement omitted.]

[fol. 902] In United States Circuit Court of Appeals

Clerk's Certificate

I, William Parkin, Clerk of the United States Circuit Court of Appeals for the Second Circuit, do hereby Certify that the foregoing pages, numbered from 1 to 901 inclusive, contain a true and complete transcript of the record and proceedings had in said Court, in the case of Davis-Bournonville Company, Plaintiff-Appellant, against Alexander-Milburn Company, Defendant-Appellant, as the same remain of record and on file in my office.

In testimony whereof, I have caused the seal of the said Court to be hereunto affixed, at the City of New York, in the Southern District of New York, in the Second Circuit, this 17th day of June in the year of our Lord One Thousand Nine Hundred and twenty-four and of the Independence of the said United States the One Hundred and forty-eighth.

Wm. Parkin, Clerk. (Seal of United States Circuit Court of Appeals, Second Circuit.)

[fol. 903] Supreme Court of the United States

On Petition for Writ of Certiorari to the United States Circuit Court of Appeals for the Second Circuit

Order Granting Petition for Certiorari—Filed Oct. 20, 1924

On consideration of the petition for a writ of certiorari herein to the United States Circuit Court of Appeals for the Second Circuit, and of the argument of counsel thereupon had, it is now here ordered by this Court that the said petition be, and the same is hereby, granted, the record already on file as an exhibit to the petition to stand as a return to the writ.

[fol. 904] IN SUPREME COURT OF THE UNITED STATES

STIPULATION AS TO PARTS OF RECORD TO BE PRINTED—Filed Dec. 5, 1924

It is stipulated and agreed by and between Counsel for the parties to the above entitled cause that the record to be printed under Rule 10 of the Court shall consist of the following designated parts of the printed record certified by the Clerk of the Circuit Court of Appeals, Second Circuit and filed herein with the Petition for Certiorari, reference being made to the titles and pages of said printed record, to wit:

1. Bill of Complaint	pages	1	to	10	inc.
2. Answer	"	11	"	28	"
3. Amendment to Answer	"	30	"	33	"
4. Testimony of Joseph F. Brandenberg	"	142	"	144	"
5. Whitford patent No. 1,028,410	"	201	"	206	"
6. File wrapper and contents of Whitford parent application	"	294	"	365	"
7. File wrapper and contents of Clifford patent No. 1,016,613	"	610	"	661	"
8. Opinion, Learned Hand, D. J.	"	751	"	774	"
9. Interlocutory Decree	"	775	"	778	"
10. Defendant's petition for Appeal	"	786	"	788	"
11. Defendant's Assignment of Errors	"	789	"	793	"
12. Citation	"	794	"	795	"
13. Opinion C. C. A.	"	884	"	899	"
[fol. 905] 14. Order for Mandate	pages	900	to	901	Inc.
15. Clerk's Certificate	"	902			

James A. Watson, Solicitor for Petitioner. Wm. S. Edmonds, Solicitor for Respondent.

Washington, D. C., November 26, 1924.

[File endorsement omitted.]